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The Antiseptic

A Monthly Journal of Medicine & Surgery

Founded by the late Dr. U. RAMA RAU in 1904

Published on the 15th of every Month

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Original Articles

THE DOCTOR AND HIS FAMILY

DR. B. PATTABHI SITARAMAYYA,

Ex-President, Indian National Congress, Madras.

How few of us know that we are very much like those whom we criticize as persons subject to ignorance, superstition and prejudice! Of these three disabilities, the last is the worst, for it obscures reason and leads to prejudging things. It kills the scientific frame of mind which is such a desideratum in the laboratory of the college and equally in the larger laboratories of human experience. In my B.A. class, I had a class-fellow who always prejudged a salt given him for analysis and imagined he saw in the bead produced on the platinum wire by the blow pipe and the spirit lamp, the color of chromium when there was not a trace of it. He was otherwise the best student in the class but failed to analyse both the salts in the practical examination of the University.

The Laboratory when thus abused inflicts only a year's failure, but the unscientific approach of a case before you for diagnosis costs the patient his life and you, your reputation. There is such a thing as lightning diagnosis which you can indulge in, for a variety in the midst of the dull monotony of out-patient work. Perhaps you see a patient walking into your clinic with a peculiar gait—as if he is getting over obstacles. Obviously he has an ataxic gait and without waiting for him to narrate his sufferings you ask him whether he has tenderness in the calves, tingling and numbness in the feet and legs, any slight œdema of the lower extremities,

* Specially contributed to THE ANTISEPTIC.

occasional pain in the heart; and at once you diagnose the case as a case of 'dry' or 'wet' or mixed beri beri—particularly in an endemic area—such as the Northern Circars or Bengal (Sunderbans). You are cent per cent. right but that should not encourage you to depend upon such speculations on the nature of disease.

Or to quote another instance, you see an elderly man groping his way into your clinic, shading off the bright light by his left palm slightly arched, seeing better as he meets with less light in the deeper recesses of your room. At once you ask him whether his sight is defective, whether he sees better at dawn and dusk and worse in the midday, better on a cloudy day than on a bright one, whether the lamp flame appears diffuse and the moon is seen as four or five moons, whether his customary glasses have recently failed him and whether the glasses he previously used and since rejected, suit him better. When the old man answers all these questions in the affirmative, you know he has cataract and can readily tell which eye is affected. 'Your left eye is giving you trouble,' but your right one is better, isn't it? The man is simply overpowered with joy at having his disease diagnosed without a word falling from his lips.

All these may be nice adventures in the domain of diagnosis, but no doctor dare play such pranks with his patients particularly in his home. Methodical examination is the only key to success and the general practitioner should not benumb his sense of touch in percussion of the lungs, in favour of a microscopic search for the tubercle bacillus in the sputum or the radiographic discovery of a haze in the hilum of the lungs. These may or may not exist, but the inspection which watches the inequality of heaving on the two sides of the chest, the palpation that discovers the increased vocal fremitus on one side—perhaps at the right apex—above or/and below the clavicle, and the right middle lobe (back) the dulness to the ear or earlier the want of resilience to the finger—on percussion, and the rales or the prolonged expiratory sound or even tubular breathing, sometimes cavernous on auscultation, it is these that help the general practitioner in diagnosis and help with absolute certainty when the eye, the ear and the hand are really sensitive and perceiving. That is why it is said that a doctor carries his eye in his palm.

II

The real difficulty a doctor experiences is not in respect of his outside practice when he is quite prepared for any disease, and where the results of his methodical and scientific diagnosis, however unexpected however surprising and however unlikely, seldom take him aback; his difficulty really arises in the treatment of his own wife and children, his own mother and brothers and sisters. In the first place, he does not expect certain diseases which he is apt to regard as affecting a lower grade of citizens in society.

While he is quite prepared to discover consumption in his milk-maid, mycetoma in his barber or cancer in his dhobie, he is not prepared to discover the first in his sister, the second in his brother or the third in his wife. The mind does not travel that way because he thinks that these 'vulgar' diseases cannot affect the higher strata of society to which of course, he assigns himself. A child has caught cold, develops temperature, coughs badly, is oppressed or even choked in the throat and presents a degree of prostration beyond all proportion to the severity or the duration of the disease. Lo and behold! the assistant surgeon of the place in whom there are no prior susceptibilities in the matter, makes the child open the mouth, and depresses the tongue with the handle of a spoon as he has not brought his tongue depressor and discovers to his satisfaction but to your discomfiture a thin or thick layer creamy in color, closely attached to the tonsil. You are least prepared for an acute case of diphtheria in your family. Then you inject anti-diphtheritic serum, but alas it is too late or the flake may disappear, the temperature go down, the alarm subside but the child which has been up and about, develops pneumonia or acute Bright or the heart is affected, urine is dried up, dyspnœa supervenes. There is complaint of severe burning of the region of the œsophagus. The child is in deep agony sleepless and restless the whole night and collapses in the morning. What a tragedy! Or it is your daughter aged 39 with seven children who is out of sorts for a year, and suddenly develops a tumour in the region of the ovary and the very lady doctor who saw nothing serious earlier, begins to think of a fibroid and ends with suspecting a cancer of the ovary, fallopian tube or the uterus itself. It has been well said that it is the habit of English doctors (Allopathic doctors) to say that nothing need be done in the earlier stages of a malignant disease and nothing can be done in the later stages. This is the disease of doctors, apart from the diseases of patients whom they are invited to treat!

Here is a case of two brothers the elder of whom develops diabetes and succumbs to consumption at 36—this before insulin was discovered. His daughter aged 39—with seven children dies of cancer of ovary, her elder sister at 42, with four children, follows her to the grave with cancer of uterus. Their father's brother's daughter aged 42 with five children develops cancer of the ovary and dies in two years. The latter's mother follows the daughter to the grave a year and half later with cancer of the œsophagus. The last case has exhibited no signs beyond a catch in swallowing —which when X-rayed showed but a kink in the stream at the level of the manubrium. Till three months before death which took place two years after the first X-ray examination there were no serious signs or symptoms except that the patient aged 62 was losing flesh and weight. In the last stages cough and unsuccessful attempts to vomit food immediately after a meal, became oppressive and

death occurred from asthenia. Four cases of cancer in one family of two brothers constitute quite an unusual phenomenon for which the doctor member of the family is least prepared.

III

Disease is no respecter of families or persons, strata of society, wealth, position or power. "The wind bloweth where it listeth and no one knoweth whither it goeth or whence it cometh". That is the biblical thought to be remembered about incidence of disease. You are accustomed to see huge elephantoid legs amongst beggars who roam about streets, but such legs are seen in the families of men enjoying opulence and luxury. Diabetes is not a disease of the rich, the poorest of the poor, the sanyasins who wander about from place to place, are as much diabetics as the prosperous lawyer or the middle aged Deputy Collector. Consumption is no respecter of age, sex or social status. Filaria has become a universal scourge. Malaria invades the palace as much as the hut and the hovel. Gastric and duodenal ulcers are not the monopoly of the neurotic. Dysentery and typhoid—two water borne diseases, are quite on the march in search of 'fresh fields and pastures new'. Sarcoma appears to be rarer than carcinoma but why it should have attacked and killed a spotless saint like the Ramana Maharishi of Tiruvannamalai passes understanding. For sometime diabetes used to be regarded as a hall-mark of culture but now after the disease has been brought under control, blood pressure is competing for the place of honour. The sphygmomanometer is undoubtedly a most reliable instrument for readings, but when three doctors examining a patient simultaneously recorded three different sets of readings, two approximating to each other and the the third remotely placed from them in favour of the patient, even this instrument's infallibility is coming to be called in question. What is wanted in regard to blood pressure is that the patient must survive its first alarm and the doctor's earlier caution. A patient was begged not to undertake an air voyage of 1400 miles (8 hours) in midsummer because his blood pressure stood at 230—110, but on the completion of the voyage it read 165—95!

An acute attack of neuralgia (temporal) revealed 212—105 but after a quarter of an hour the same doctor read 175—100. A candidate for the I. A. S. examination who resigned a scientific job on Rs. 750 a month, was disqualified by the Medical Board as having 175—100. He lay down in the hospital for a month and his readings ranged about 125—82! His age was 36. He then appeared before the Medical Board but was again disqualified. He was not very nervous either.

A Life Insurance case recorded 100 and 65. The proponent was a cultivator who takes the plough in hand. I passed him but have been examining him for the last 10 years, year in year out.

The company is none the worse for having accepted the risk. In a jail eight out of twelve detenus showed 106—75 and they are A_1 in health these ten years. Gandhi carried on for over 25 years with the blood pressure touching 212 (systolic) at the slightest exertion, but his massage for a quarter of a century and his mudpacking for an hour on the head and the lower abdomen and his silence had saved him until an assassin's bullet took his life. In regard to blood pressure it is the diastolic touching 110 that is alarming. The systolic may do its gymnastics with rise and fall, with impunity.

A retired Deputy Collector (Deputy Registrar of Co-operative Societies) whose application for commutation of pension was rejected because of blood pressure, but was recommended by a majority of two to one in the Medical Board, for Rs. 25,000 by way of commutation, developed sugar in urine and died of coma in a year after receipt of money. He had normal readings of blood pressure except before the Board, and even then two doctors had low readings while one had high.

Every rule has its exceptions but when exceptions multiply they belie the rule. With extensive massage and the stabilization of blood pressure at 175—100 in a person aged 70 and above, blood pressure bids fair to join the category of diabetes and trigeminal neuralgia as possessing but a nuisance value—not necessarily a fatal effect. What is wanted is that the patient must learn to treat his own disease, as he passes a sound of 7/10 every six months in case of stricture or as a diabetic gives himself two injections of insulin a day and eats *laddus* and *jilebi* in moderate measure.

IV

Any disease is alarming at first, it becomes amenable to treatment later and turns out friendly and harmless in due time. The diseases of man are a menagerie. They are fierce at their first outbreak. They must be studied and handled with sympathy, and understanding. Most people contract a disease or distemper at 36 and after due concern and care, they befriend it and begin to like it. They compare their afflictions with the afflictions of others and find their own ailment better than the rest. The diabetic pities the asthmatic who has neither food by day nor sleep by night, while he himself eats like a gourmander by day and sleeps like a log at night. The asthmatic pities the rheumatic who cannot scratch his body nor ward off a fly and seeks external assistance for both. His temperature and his sweats are baffling. The rheumatic pities the diabetic because he is not afraid of a prick by the pin or a cut by the knife.

While the allopathic doctor is every day multiplying his weapons of warfare against man and beast, against the fly and the mosquito, against the flea and the gnat, against toxins and ferments,

against the amœba and the microbe, there remain the homœopathic doctor with his microscopic doses, the Ayurvedic physician with his pills and powders, *lehyams* and *rasams*, the Unani tibbi with his *halvas* and *sharbaths*, curing more patients than they 'kill', And all these seem destined to make way before the Naturo-path with his cold water and soft clay, or the astrologer who if he is not actually incorporated in the physician, constitutes a valuable consultant to physician and patient alike in India. His argument is that if the microscopic bacteria and bacilli can affect your health, why should not the telescopic stars and planets that preside over your birth and destiny, equally influence your life and well-being (or ill-being). May we not, in the midst of these bewildering forces affecting life in its origin, growth and decay, ultimately revise our ideas and profit by the simple adage that every person should be a physician or a fool at forty ?

Aureomycin Therapy in Peritonitis

Chemotherapeutics were superseded by antibiotics, in the treatment of various conditions. Penicillin and streptomycin have failed to prevent bacterial deaths following successful surgery. Aureomycin was selected in the hope of efficiently reducing the mortality rate. Wright and his co-workers used it as the sole antibiotic in 235 cases of peritonitis of all types. Prior to operation intravenous infusions are given to correct dehydration and/or any electrolyte imbalance, and gastric section is started. When peritonitis is diagnosed before operation, 500 mg. aureomycin is given intravenously. After operation gastrointestinal decompression is maintained as long as necessary ; the fluid volume is kept normal by intravenous glucose, saline or blood with vitamin therapy and with early ambulation.

Immediately after operation 500 mg. aureomycin is given I.V. twice a day, till the clinical condition has improved, so that the fluids and the drugs may be given by mouth, 500 mg. twice a day or 250 mg. six hourly. Since the introduction of buffered aureomycin hydrochloride, there has been a marked decrease in. chemical phlebitis due to intravenous injections.

In children under twelve years of age, peritonitis secondary to appendiceal perforation is very quickly controlled with aureomycin. Dosage was 300 to 500 mg. depending on the age and weight of the child, twice a day intravenously. The mixed bacterial flora usually found in peritonitis due to perforated gastro-duodenal ulcer, is also sensitive to aureomycin. No deaths occurred.

Wright *et al* conclude that buffered aureomycin hydrochloride is the antibiotic of choice in the treatment of peritonitis.—(*Surg. Gynaecol. and Obstet.*, Vol. 92 ; 1951, pp. 685-689).

THE RATIONALE AND THE TECHNIQUE OF BCG VACCINATION*

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AND
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Introduction.—Today BCG Vaccination is considered one of the most effective weapons in the fight against tuberculosis. In March 1948, the UNICEF (United Nations International Children's Emergency Fund) allotted four million dollars for the BCG campaign throughout the World. The campaign in India was inaugurated at Madanapalle (near Madras) in August 1948 by the Hon'ble Minister of Health, Government of India. Today all the States in India are engaged in the campaign. Till the end of January 1952, in India alone, more than 6½ millions of persons were tested out of whom a little more than two million people have been vaccinated with BCG. In the following article we have dealt with in detail the factors of immunity and primary infection in tuberculosis and attempted to bring out the principle underlying the immunity conferred by BCG vaccination.

Immunity in infectious diseases and in tuberculosis:—[1] The term immunity in its usual application, signifies the power of the animal body to resist (*a*) infection by parasite micro-organisms or (*b*) the injurious effects of their products of toxins.

This may be acquired by a natural recovery from an infection in which case specific resistance powers are developed in the body during the infection period. This may persist for a long time as exemplified by the immunity following smallpox or it may be transient as after pneumonia.

Boyd[2] says that though our conception of immunity or resistance is that of children, despite the use of high sounding words, we can yet express some general ideas upon the nature of resistance.

The process of immunity to any infection depends on three factors: (*a*) Humoral anti-bodies; (*b*) phagocytosis; and (*c*) immunological behaviour of certain tissue cells.

Of these factors, tissue immunity, is very hard to understand in certain tissues. But in general, the humoral and cellular defence forces work side by side in resisting any infection and the reticulo-endothelial system is the reservoir for the formation of anti-bodies.

The particular constituent or the product of the micro-organism which provokes anti-body formation is called the antigen.

In the vast majority of acute infectious diseases the function of the various humoral anti-bodies like, opsonins, anti-toxins,

*Specially contributed to THE ANTISEPTIC.

bacteriolysins, agglutinins, precipitins, etc., are understood and their effect may be demonstrated *in vitro*.

[3]In the serum of animals immunised against tuberculosis, these humoral anti-bodies can be demonstrated, but their exact significance in the resistance against tuberculosis remains obscure.

But cellular immunity is more clearly understood. The polymorpho-nuclear leucocytes which are the first to engulf an invasion of tubercle bacilli, though unable to destroy them, do play an useful part in focalising the infection. The role of mono-nuclear leucocytes in engulfing the bacilli, destroying them and themselves getting transformed into epitheloid cells and giant cells are too well known. The lymphocytes which Rich[4] said "congregated in the peripheral parts of the lesion having the appearance of phlegmatic spectators, passively watching the turbulent activities of the phagocytes" are now known to produce a growth-stimulating substance called "Trephones" by which fibroblasts multiply in the blood and thus help in a long way, the repair of the damaged tissue.

The fundamental fact to be remembered in tuberculosis is that the tuberculous infection and the tuberculous disease are two different entities. Unlike the infection by the other micro-organisms, in tuberculosis the first entry of the pathogen does not produce the disease in the majority of persons, but gives them a state of infection with its results *viz.*, hypersensitivity and resistance.

The hypersensitivity which an infected animal exhibits was termed allergy by Von Pirquet in 1907. He demonstrated that tuberculin sensitivity existed as a result of a true tuberculous infection.

Robert Koch realised the fundamental distinction between the reaction to tuberculosis in a healthy animal and in one already infected with tuberculosis.

Since 1908, when Romer[5] clearly set out the hypothesis that hypersensitivity constituted the essential mechanism of defence in acquired resistance to tuberculosis, the view has gained general acceptance.

In spite of Rich's experiment to dissociate allergy and immunity and Birkhaug's term "Iathergy," the fact remains that an infected animal develops allergy not only in the skin but also in all the tissues of the body.

Immunity from primary infection:—We will next consider the various modes of natural infection.

The first infection with tuberculosis as with any other infection takes place by the following routes:—1. Congenital and 2. Acquired (*a*) inoculation; (*b*) ingestion; and (*c*) inhalation.

Congenital infection can occur only through the infection of the placenta. This is so rare as to be negligible.

Infection by inoculation is the chief method in experimental animals, but is rare in human beings. By handling infected material, the surgeon, pathologist, nurse, or butcher can get tuberculous lesions with enlargement of the regional lymph nodes.

Infection by ingestion of tuberculous milk is common in countries where the incidence of bovine tuberculosis is high. Even though the incidence of tuberculous infection and disease among cattle is not well known in our country, it can safely be said that our national habit of drinking only boiled milk rules out this route of infection.

Inhalation infection accounts for the great majority of cases in our country. Indiscriminate spitting of the infected sputum is the main cause for this. In damp climates [6], infected dust usually harbours virulent live bacilli for three to four months. Infected droplets may be expelled by the phthisical person from the mouth in speaking and from the bronchi through coughing. Bronchial droplets contain bacilli more often than spoken droplets. Cough droplets will carry the bacilli for nearly a yard before falling to the ground.

By whatever route the bacilli enter the system, primary tuberculosis develops if the dose is adequate. The vast majority of exposed persons do not show any marked signs or symptoms and they overcome the infection by a process of repair, namely, fibrosis and calcification. Depending on the region of entry, a primary complex can develop either in the lungs, abdomen, or tonsils with enlargement of the regional lymph nodes. If the herd-resistance and the individual resistance are sufficient to overcome the infection, an arrested primary complex results and six to eight weeks after the entry of the bacilli the body develops specific immunity with a simultaneous development of allergy to a second dose of the bacilli or any of its products.

Since the incidence of primary tuberculosis in the majority of cases goes unnoticed due to the lack of sufficient symptoms or signs, the only means of diagnosis of the onset of this condition is by a serial tuberculin test.

The incidence of infection in any country depends upon the opportunities of contact with sources discharging the bacilli. If the sources are vast and not isolated, people will catch the infection quickly and early in life. With a given dose of infection, people in a lower standard of life will catch the infection more quickly than those with a higher standard of living.

With the well known high rate of mortality and morbidity of tuberculosis in India, with the poor facilities for isolation of these cases, with the low nutritional and housing standards and with the appalling standard of general hygiene and sanitation, it is no wonder that our infection rate is very high, especially in urban and semi-urban areas as the following table will show :—

Age[7]	Bombay	Baroda	Madanapalle	Madras
5 yrs.	39%	38%	43%	46%
10 ,,	70%	68%	61%	58%

Dangers of primary complex.—In trying to find a method for acquiring resistance to tuberculosis, we should consider if we may let ourselves in, for receiving a natural infection over which we have no control. We have no reliable statistics to show how far primary infection is overcome with the establishment of allergy and immunity and to what extent the same primary infection goes on to progressive disease. It is not always that primary tuberculosis gets arrested. Numerous factors such as the dose, virulence of the bacillus, herd resistance, individual resistance etc., are concerned in controlling a primary infection. Price[8] has listed the following conditions as complications of a non-healing primary complex.

(1) Caseation, liquefaction and cavitation of the primary focus :—(*a*) may heal ; (*b*) death from toxæmia or hæmorrhage ; and (*c*) acute pneumonic phthisis.

(2) Involvement of other mediastinal glands.

(3) Hæmic spread from mediastinal glands *via* the thoracic duct.

(4) Hæmic spread from primary focus or gland.

(5) Rupture of the caseous gland into a bronchus giving rise to aspiration caseous pneumonia.

Further Dorothy Price[9] says that there are two age groups in which the primary tuberculosis invariably does not get arrested but goes on to progressive primary tuberculosis. These age periods are : (*a*) children below 3 years and (*b*) adolescent period.

Lal[10] says, "it is well known that in the early period of life, the anti-body forming apparatus is unable to respond effectively to antigenic stimuli. This would appear to be a general rule for all organisms. Amongst other things, it is sought to be explained by the fact that anti-bodies are specialised serum globulins and that in the new born animal, globulin particularly euglobulin is markedly deficient. In the experience of Davis (1937) and Felton (1938) children in the first year of life were unable to produce protective anti-bodies against a pneumococcal antigen which was highly effective in stimulating their production in older individuals. Rich (1944) has also demonstrated that the acute splenic tumour which represents an immune reaction to foreign antigens and which can readily be produced in older age groups by introducing foreign proteins whether of bacterial or non-bacterial origin, rarely develops in infancy."

Under these circumstances, infants who contract primary infection, almost always develop progressive primary tuberculosis, and

one of the commonest manifestations of this is tuberculous meningitis. Dorothy Price[11] says that the incidence of tuberculous meningitis is highest in children under three years of age and gets progressively less as they grow old. In her opinion, it is most commonly seen between the ages of nine months and two years.

As regards the danger of acquiring primary infection during the adolescent period, Dorothy Price[12] gives the following as possible factors and calls them "Adolescent factors."

(1) An endocrine factor especially marked in girls.

(2) Body growth with food requirements not always satisfied.

(3) Great energy with little desire or opportunity for rest.

(4) Over-work at studies, anxiety and stress of beginning to earn.

(5) Increased opportunity for extra-familial contact.

It is well known that phthisis frequently develops during young adult life, especially in females. Apart from bad nutrition and repeated pregnancies, Dorothy Price[13] considers that the mortality and the morbidity are dependent on the ratio of the adolescent tuberculin reactors at the 14 to 18 years age-period, *i.e.*, a low number of positive reactors at 14 to 18 years, tends to produce a high death rate in the 15–25 year age-period.

Heinbeck and Mariette[14], are of the opinion that an young adult who possesses a positive tuberculin test, and a satisfactory healed primary complex is less prone to develop tuberculosis than a negative reactor and give the following figures in support of their contention :—

	Healed positive	Negative
Heinbeck (1936)	4·3% got Tb.	34·2% got Tb.
905 nurses	0·0% died.	3·5% died.
Marette (1936)	4·46% got Tb.	36·9% got Tb.
925 nurses	0·0% died.	3·8% died.

Thus we see that a positive reactor is always in a more advantageous position than a negative reactor. To become allergic after a natural infection is not always an unmixed blessing. The healing of the primary complex is dependent upon the production of individual resistance to the pathogen.

Johannes Holm[15] says that even amongst the Danish people who live under very good nutritional and hygienic conditions, 1% of children under school age, 1½% of school going children (6–14 yrs.), and 5–10% of the adults contract tuberculosis with demonstrable discharge of the bacilli, at the time of primary infection.

Though we do not have similar statistics for India, these percentages must certainly be very much higher in our country because it is well known that malnutrition and bad hygienic conditions lower

the resistance against the tubercle bacilli; and these are widely prevalent in our land.

In addition to these disadvantages, the consensus of opinion today regarding the pathogenesis of reinfection tuberculosis is, that it is a reactivation of the quiescent foci acquired during primary infection. It is well known that persons who passed through natural infection harbour inside their bodies viable bacilli, which are really latent sleeping volcanoes which may erupt at any time when the general level of resistance gets lowered.

Artificial immunity of tuberculosis.—Under the above circumstances the question of artificial immunity naturally comes into the picture.

Three [16] ways of producing active artificial immunity are :—

(1) The introduction of attenuated living organisms ; (2) the introduction of cultures of micro-organisms killed either by heat or by antiseptics ; and (3) the introduction of exo-toxins in gradually increasing doses.

It was Pasteur [17], who accidentally found that the inoculation of an old culture of chicken cholera germs protected chicken against the malady. Pasteur then told the Academy of Medicine in Paris, "I have demonstrated a thing that Jenner could never do in small-pox and that is, that the microbe that kills is the same one that guards the animal from death".

The first idea on acquired immunity is got from the experiment of Koch's phenomenon. Later, many experiments were made in order to obtain the antigen of the tubercle bacilli but to no avail. In this connection Max Pinner [18] says, "every conceivable physical and chemical trick was used on the tubercle bacillus in an attempt to produce an antigen with powerful immunising action and a minimum of toxic effects. The tubercle bacilli were crushed, ground, frozen, heated, they were extracted with protein, lipoid, and fat solvents, they were split and digested with acids, alkalies, ferments and other micro-organisms and they were left to stew and die in their own juices. It is doubtful whether any other living organism including man, has ever been exposed to quite so many ingenious devices of torture and killing.

Even though opinions on acquired immunity in tuberculosis have very often changed during the last 50 years, one fundamental fact remains and that is, only an actual tuberculous infection can produce an acquired immunity. In other words, there must be the production of tuberculous tissue in the body, *i.e.*, a primary complex in order to produce acquired immunity. This then obviously, became the guiding factor in all further attempts at immunisation.

Several methods were tried and abandoned and only one method stood the test of time and experimentation and that is *BCG Vaccination.*

History of BCG vaccination.—Bacillus Calmette-Guerin was developed by Prof. Calmette and Prof. Guerin at the Pasteur Institute in Parris. A bovine strain of the tubercle bacillus was isolated in 1906 and was sub-cultured in glycerine-ox-bile potato medium; it was then transplanted every 15–22 days. Under these conditions the strain which was originally virulent, became less and less virulent and after four years it was no longer pathogenic for cattle or for guinea pigs but it still caused tuberculosis in rabbits and in horses. After 13 years *i.e.*, after 230 transplants on ox-bile-potato medium, the strain lost all its virulence to animals and from that time onwards, the strain has remained stable in all its aspects and particularly in regard to its non-pathogenic behaviour, although it is now grown in the synthetic fluid medium of Sauton. All the BCG Vaccine throughout the world comes from the original Calmette's strain. The first human BCG vaccination was performed in 1921 by Will-Halle who administered the vaccine by mouth. The same mode of administration was used in the first extensive series of BCG vaccinations which commenced in France and her colonies in 1922. In 1925 Germany, and the Scandinavian countries adopted this vaccination, the oral method of vaccination being used first. In 1926 Heinbeck of Norway used the subcutaneous route, but as this method produced severe reactions it was abandoned. In 1927, Wallgren of Sweden started the intracutaneous method of vaccination which proved successful and has remained ever since the method of choice in most countries. Proper technique and dosage have since been carefully worked out during the last few years.

Between the years 1927 and 1932, there was a great deal of controversy regarding the efficiency and the harmlessness of BCG. Petroff in America claimed that the BCG strain can mutate into the virulent type and hence was dangerous to use. Shortly after this, a disaster happened at Lubeck in Germany where, out of 252 children who were vaccinated by mouth with BCG, 72 died of tuberculosis. But it was definitely proved that this disaster was due to an unfortunate mixing up of the virulent human strain of tubercle bacilli with the BCG. This virulent strain was being cultured in the same laboratory and incubated in the same incubator. Though this incident caused a temporary set-back to the progress of BCG vaccination, it brought to the forefront the need for extreme caution and great care in the preparation and use of this vaccine.

Preparation of BCG vaccine in India.—The National BCG laboratory is situated in the premises of the King Institute at Guindy and is housed in a separate building. The BCG strain is grown in the synthetic fluid medium of Sauton of the following composition :–(1) Magnesium sulphate ; (2) Acid citric ; (3) Asparagin ; (4) Glycerine ; (5) Secondary potassium phosphate ; and (6) Ferri et ammonium citras.

The bacilli grow as a film on the surface of this medium and the strain is maintained by transfers every ten days. The production of a safe and effective vaccine requires great care. A fourteen-day-old culture of the vaccine is taken and the bacilli are filtered in a special filtering apparatus. Using sterile precautions, they are accurately weighed in a sensitive chemical balance. They are then emulsified in a relatively dry state in a mechanical grinder so that the bacilli lie almost individually and not in large clumps. By adding diluted Sauton medium, (one part of Sauton to three parts of re-distilled water) a suspension is made so that one c.c. contains ¼ mg. of the vaccine. The vaccine is distributed in sealed sterile glass ampoules. Before the vaccine is issued, its sterility is controlled for 48 years; the vaccine thus prepared should be stored between 2° and 4°C., and should be used within eight days of issue.

Who are to be vaccinated with BCG.—All persons who have not got the immunity through natural infection can be vaccinated with BCG. That means all the negative reactors to tuberculin can be vaccinated with BCG except in certain conditions where the tuberculin reaction becomes a false-negative. By giving BCG vaccine we induce a controlled primary infection and a well established immunity will develop six to eight weeks after the inoculation.

BCG vaccination is not necessary to tuberculin positive reactors. Such persons have already got tuberculin allergy due to primary infection acquired from natural sources. If the vaccination is given, the Koch phenomenon[19] will develop as "a red, sore infiltration around the site of the vaccination, appearing one or two days after the vaccination and looking very much like an infection with germs, such as streptococci." Further some of the tuberculin positive persons may be having latent tuberculous disease and if the disease is diagnosed shortly after the vaccination, the vaccine will be blamed of having caused the disease. BCG vaccine will never reactivate a latent tuberculosis. A preliminary tuberculin test is always done before giving the vaccine, in order to make sure that BCG vaccination is indicated for the case or not.

BCG is absolutely harmless for the new-born children, who should all be vaccinated. Since they are slow to develop antibodies, a smaller percentage of them will become tuberculin positive after vaccination. Hence it is suggested that a stronger dose of the vaccine should be used. Further, it is extremely difficult to give a real intra-dermal injection in the new born, because the skin is so thin and some of the vaccine will go into the subcutaneous tissues causing some little unpleasant reactions, such as abscesses etc. So, in a mass vaccination programme children under one year of age are not included. They should however, be referred to Child Welfare Clinics for BCG vaccination.

In a mass vaccination programme, the age group which shows the greatest number of negative reactors should be approached and

they should be vaccinated. In our country the majority of the tuberculin negative reactors will fall under 20 years of age. There are practically no contra-indications for BCG vaccination. It is always better not to vaccinate at a time when an epidemic of any kind is prevalent in the locality, since the vaccine might be accused by the lay undiscerning public as the cause of the epidemic. Further, since diseases like measles suppress the tuberculin sensitivity temporarily, it is better not to vaccinate the children in areas where there is or has recently been an epidemic of such diseases.

Malnutrition is not a contra-indication to BCG vaccination. It has not been proved that BCG behaves in a different way in undernourished children. Tuberculin sensitivity is depressed only in a certain percentage of extremely cachectic persons. Undernourished children in war-desvastated Eastern Europe did not react in a different way after the BCG. In this connection Johannes Holm[20] says, "since it is known that malnutrition causes a particularly low general resistance to tuberculosis, resulting in a much higher percentage of the infected persons contracting a tuberculous disease, there is every reason for using the BCG vaccine in the very countries with under-nourished populations, in order to induce specific resistance to tuberculosis".

There is considerable misunderstanding about BCG vaccination and the isolation of the vaccinated person from open cases; so some detailed consideration is necessary. Price[21] listed the following two conditions to be fulfilled for the success of the BCG campaign:—(1) contacts must not be incubating tuberculosis at the time of vaccination; and (2) the vaccinated person must not be exposed to infection until allergy has been established. In order to satisfy the first of the 2 conditions, the contacts of an open case, if found tuberculin negative, are not given the vaccination but are tested six weeks after the isolation of the open case and if still found negative they are given BCG vaccination. It is not considered dangerous to give BCG during the pre-allergic stage of a tuberculous infection. In the same way exposure to open cases after vaccination and before the allergy is established, is not considered dangerous. BCG vaccination is not likely to give a person a temporary negative phase in which he is more prone to get an attack of the disease. Holm[22] says, "if the vaccine is given to persons in the pre-allergic state of a virulent tuberculous infection, the vaccination will of course, have little or no value and some may develop tuberculosis. These cases do not develop because of the vaccination, but would develop any way. Exactly the same will be the case if newly vaccinated persons are exposed to virulent tuberculous infection."

Price[23] who listed the above conditions has admitted that if these precautions are not observed the cases of tuberculosis that would develop will be accounted as "failures of BCG".

No doubt, if it is possible to isolate the vaccinated persons from the open source till they become tuberculin positive, it will be well and good; but in a mass vaccination campaign in underdeveloped countries, this is hardly possible. Hence, the International Tuberculosis Campaign has not considered isolation essential.

Tuberculin and the technique of tuberculin test.—Robert Koch discovered tuberculin in 1839. A six to eight weeks' old culture of tubercle bacilli in glycerine broth was killed by heating and filtered through paper. The resulting fluid was evaporated to one fourth of its volume on a water-bath. The product was called Old Tuberculin, (O.T.) which contained not only the killed products of the bacilli, but also glycerine about 25% to 50% in addition to proteins derived from the culture medium. Florence Seibert in 1934 isolated the "Tuberculin" which is a protein fraction of the bacilli and she called it PPD, (Purified Protein Derivative). For the preparation of PPD, the synthetic fluid medium of Sauton was used. A six to eight weeks' old culture of the bacilli is first autoclaved to kill them. It is subjected to a series of filtrations through paper, Berkefeld filter and 7% collodion membrane. The end-product contains only a concentrated solution of tuberculin which is precipitated by trichloracetic acid. The powder thus obtained is purified by washing with ether and then standardised. The PPD has got many advantages over O.T. It is not contaminated with the proteins of the culture medium as is O.T. The salts, glycerine etc. are removed by the ultrafiltration. The product itself is the pure protein fraction of the bacilli. It is 500 times stronger than the O.T.

One Tuberculin Unit is equal to 1/100 mg. of O.T. or 1/50,000 mg. of PPD.

The PPD powder is dissolved in a buffer solution containing the following:—(1) Primary potassium phosphate; (2) secondary potassium phosphate; (3) sodium chloride; and (4) quinosol.

The dilutions of PPD are kept like BCG, between 2° to 4°C., and they should be used within fifteen days after the date of preparation.

Of the various methods in use for tuberculin testing Mantoux's intradermal test is the method most generally used since it is least harmful and is a quantitative test. The test is done on the middle of the volar aspect of the forearm, preferably the left one. As a result of the experience gained in the campaign in India during the last three years, only one injection of 5 T.U. is used now-a-days for a Mantoux's test. The reading of the test is made after three days (72 hours) or on the fourth day (after 96 hours). The specificity of a tuberculin reaction is slow to appear and slow to diasappear. Infiltrations of six millimetres and more are taken as positive reactions. The erythema surrounding the infiltration is not taken into account.

The amount of tuberculin used in 5 T.U. is 1/10,000 mg. and is so small that no focal or systemic reactions are usually seen. It is our experience that even in heavily infected localities not more than 2% show a bullous reaction.

There are only a few contra-indications for the tuberculin test. Acute infectious diseases like measles and smallpox, temporarily suppress the tuberculin allergy : so also pregnancy and prolonged ultra-violet or X-ray therapy. It is always better to avoid tuberculin tests in toxæmic conditions.

Technique of BCG vaccination.—0·1 cc. of the vaccine is injected intradermally into the skin of the deltoid region of the left shoulder. The injection is made as superficially as possible, with a special platinum needle. A wheal will appear if the injection is made correctly and this will disappear within half an hour and after that nothing will be seen at the site of injection for some time. After three or four weeks a small red nodule will appear at the site of injection and this may become a little sore. In some cases a small drop of pus may come out leaving a small ulcer which will heal slowly. There are no reactions after the inoculation *e.g.*, fever or the like.

If the vaccination is given subcutaneously or too deeply into the cutaneous layers, the area of local reaction will be larger than normal. In addition the regional lymph nodes may get enlarged and form an abscess. If there is a definite abscess, a single puncture of the abscess should be made. If the vaccinated person is seen after the abscess has burst no special treatment is necessary. Incision of these should be avoided. They heal by themselves and where facilities exist, a course of local ultra-violet ray therapy may be given.

If the vaccination is effective, the person must become allergic to tuberculin six to ten weeks after the BCG.

Efficacy of BCG vaccination.—It has been found in European countries that more than 90% of vaccinated persons retain the immunity for 4 to 5 years after the vaccination.

To demonstrate any effect that BCG vaccination might have, one requires a group of vaccinated and a group of unvaccinated tuberculin negative reactors. There are many published reports which go to prove that BCG is one of the most potent antituberculosis measures known. The method is not expensive ; it is easy to carryout and free from danger. Experience in Western countries shows that it is possible thereby to reduce morbidity and the mortality from tuberculosis to about one fifth. If we should see any appreciable effect of this measure in the epidemiological trend of tuberculosis in India, the negative reactors must be vaccinated within the shortest possible time. If this can be achieved within five years, and if we vaccinate simultaneously all new persons who

are coming of age (1 year) and retest those that have been BCG-vaccinated and also re-inoculate them if necessary, we may expect a marked fall in the mortality-rate from tuberculosis in about 15 to 20 years.

The controversy regarding the danger of BCG and its efficacy is all only history now. It may be that the duration of immunity conferred by BCG in India may be different from that recorded in other countries. But the fact that remains it is one of the weapons to fight the scourge of tuberculosis especially in underdeveloped countries and it is universally shared by all thinking people.

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References:

1. Mackie and McCartney—"Hand Book of Practical Bacteriology", Seventh Edition (1946), E. & S. Livingstone Ltd., Edinburg, page 31.
2. William Boyd—"Text Book of Pathology", 4th Edition (1946) Lea and Febiger, Philadelphia, page 146.
3. Lal, R. B.—Epidemiological Consideration of BCG Vaccination with Special Reference to Immunity and Allergy," Proceedings of the Sixth Tuberculosis Workers' Conference (1948), Calcutta, published by the Tuberculosis Association of India, New Delhi.
4. Quoted by Boyd as in (2) above.
5. Quoted by R. B. Lal as in (3) above.
6. Price, Dorothy S.—"Tuberculosis in Childhood", Second Edition (1948), Wright & Sons, Bristol, page 17.
7. Patel, Bhakar—"A Review of BCG Vaccination Work in India". Proceedings of the Seventh Tuberculosis Workers' Conference, (1949 at Bombay), Published by the Tuberculosis Association of India, New Delhi, p. 57, and from BCG Section of the Govt. Tuberculosis Institute, Egmore, Madras.
8. Price, Dorothy S. as in (6) above, page) 56.
9. Price, Dorothy S. as in (6) above, page) 94.
10. Lal, R. B. as in (3) above, pages 36 and 37.
11. Price, Dorothy S. as in (6) above, page 94.
12. Price, Dorothy S. as in (6) above, page 116.
13. Price, Dorothy S. as in (6) above, pages 115 and 116.
14. Heimbeck, J—"Tuberculosis in Hospital Nurses", Tubercle, 1936 : 18 : 97. Mariette, E. S.—"Tuberculosis in Sanatorium Nurses", Tubercle, 1936 : 18 : 103.
15. Holm, Johannes—"BCG Vaccination Against Tuberculosis," First Edition, 1948, distributed by International Tuberculosis Campaign, page 5.
16. Mackie and McCartney as in (1) above, page 32.
17. Paul de Kruf—"Microbe Hunters," 21st Printing (April 1945), Pocket Books, Inc. New York, N. Y., page 171.
18. Pinner, Max—"Pulmonary Tuberculosis in the Adult", First Edition, Charles C. Thomas Springfield, Illinois, V. S., page 163.
19. Holm, Johannes, as in (15) above, page 15.
20. Holm, Johannes, as in (15) above, page 22.
21. Price, Dorothy S. as in (6) above, page 142.
22. Holm, Johannes, as in (15) above, page 20.
23. Price, Dorothy S. as in (6) above, page 144.

The Pendulum Knee-Jerk

No good or useful purpose is served by the grouping of the pendulum knee-jerks into such categories as rhythmical, hypertonic, and cerebellar. Pendulum knee jerks may be found even in the absence of permanent organic lesion in cases of functional nervous disease and in depressive psychoses.—(Spivak. L. I., *Neuropath Psychiat.* 20 : 1, 56-57, 1951, *Abst. W. Med.*, 1951).

ON WHAT LINES SHOULD MODERN ADVANCES IN LEPROLOGY MODIFY THE ORGANISATION OF AN ANTI-LEPROSY CAMPAIGN*

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Introduction.—From the results of the numerous researches carried on everywhere, three main conclusions emerge which, however, need some minor alterations in order to render the underlying principles more clear and still more concise; these are fundamental for a more efficacious, more humane and more economical orientation of any anti-leprosy campaign. These three principles are:—

(1) The individualisation and definite autonomy: (*a*) of the clinical *tuberculoid* type which is *benign* for the patient, as far as his surroundings are concerned and *noncontagious* except in the reactional stages of the disease; (*b*) of the clinical; undifferentiated, inflammatory, type whose evolution and contagiousness vary widely and require careful and close observation by the leprologist.

(2) The uncontestable, and often spectacular results of sulphonetherapy.

(3) The detection of the immuno-allergy in the patient himself, by which we can judge the prognosis of the disease, and also in the contacts to judge their susceptibility to the infection by means of specific reactions for which the most widely known at present is the Lepromin-reaction of Mitsuda.

These three points along with the practical applications which they suggest for the prophylaxis of leprosy will be dealt with in this article.

Classification of the clinical types of leprosy.—Leprologists assembled at the Fifth International Congress of Leprosy held at Havana, were all agreed about the clinical classification of leprosy into three main types:—

A. LEPROMATOUS TYPE (Symbol L). *Clinical macroscopic appearance*:—Nodular lesions invading the skin and mucosa (particularly of the upper respiratory tract) and peripheral nerves, eyes and other organs. *Histology*:—Granulomatous, with small round cells of lymphocytic type and epitheloid cells showing various degrees of the vacuolisation leading to the formation of the so-called *foamy cells* of the English authors, so characteristic and even pathognomonic of this type of leprosy. *Bacterioscopy*:—Numerous bacilli, disseminated everywhere, isolated or in clusters (globules). *Prognosis*:—Worsening progressively, at most stabilisation after long time, but after having produced much organic damage. Spontaneous

* Specially contributed to THE ANTISEPTIC.

regression never observed. *Immuno-allergy*:—Mitsuda negative. *Contagiousness*:—Open form of leprosy, highly contagious.

B. TUBERCULOID TYPE (Symbol T). *Clinical macroscopic appearance*: Maculæ and patches, dichromic, achromic or hyperchromic, anæsthetic or hyperæsthetic in the beginning, invading more or less extensive surfaces of the skin. Peripheral nerves attacked. *Histology*:—Tuberculoid in structure, a layer of small round cells of lymphocytic type, having in the centre one or many giant cells of Langha's type. *Bacterioscopy*:—Negative or with scanty bacilli, except in reactional stages. *Prognosis*:—Stabilisation or spontaneous regression, unless there are constant lepra-reactions. Nerve lesions leading to atrophies, deformities and mutilations. *Immuno-allergy*: generally positive or variable. *Contagiousness*:—Non-infective type, devoid of contagion, except in reactional stages.

C. INFLAMMATORY UNDETERMINED TYPE (Symbol I). *Clinical macroscopic appearance*:—On the skin dichromic or erythematous patches. Nerves attacked. *Histology*:—Simple inflammatory non-specific structure, constituted by small round cells around the vessel or the affected dermic zone. *Bacterioscopy*:—Negative or weak positive. *Prognosis*:—Variable—regression, progression, transformation into one of the polar types. *Immuno-allergy*:—Positive or negative. It is interesting to note that the benignity or malignity of the clinical condition depends on the positive or negative nature of the lepromin-reaction. *Contagiousness*:—Cases generally non-contagious, except when progressing to the polar lepromatous type.

As one can easily see, cases under this undetermined group are of two types:—the one, we may say *negative*, as the histological picture does not show the characteristic appearance of the other types and appears more as a basal inflammation; the other, which gives rise to a certain confusion, due to transitional forms found with varying degrees of predominance in structures belonging to the *polar* types—say, giant cells or foamy cells—constituting the *borderline* cases of Wade. Hence, the justifiable objections of many leprologists to accept the histological substratum as the main base of the clinical classification of leprosy, whose different forms seem to be dependent on many factors, not yet perfectly understood, among which we may point out the selectivity of the infected tissues, the severity of the infection, the repeated superinfections in highly contaminated atmosphere and surroundings and—most important—the immunological reactional power of the individual.

New researches needed in order to render this classification more useful to the practitioner:—The real advances made in the classification of the clinical types of leprosy are, as we have already seen, mainly dependent on histological examinations. Such examinations are not at the disposal of every practitioner, especially in backward

rural areas where leprosy is more widely prevalent. Moreover, in *polyneuritic undifferentiated* cases, a biopsy of the nerve would be required for a detailed examination and this is possible only where adequate laboratory facilities exist. The three factors which the general practitioner can at best therefore, utilize are :—the clinical lesion, the bacterioscopy and the lepromin reaction, leaving the histological examination to specialised laboratories and to cases where such investigation is deemed absolutely essential.

It must be possible to coordinate the modern advances in diagnostic methods with the old clinical data in order that the practitioner may group the leprosy forms within the three main types above referred to. I believe that this can and should be done, by an International Organisation or a Commission composed of a Leprologist, a Dermatologist and a Histopathologist who should visit different countries where leprosy is prevalent, and study *undifferentiated* cases and have them classified, in order to reduce them to some easily diagnosable clinical forms. It would also reduce the number of cases where histological examination may be specifically needed.

For the present with the facts before me, I consider that the following diagnostic plan might be useful to practitioners :—

(1) All the nodular and mixed forms (of the old authors) correspond to the *lepromatous type.*

(2) The *tuberculoid type* should for the present include: (*a*) the maculo-anæsthetic type or hyperchromic forms (of the old authors); (*b*) the erythematous form, restricted or diffuse, with flat or hyperæmic thickened surface, but with no trace of miliary nodular infiltration in these thickened areas. Its non-contagiousness should be judged by bacterioscopy : if *positive*, it is contagious and subject to further careful observation of its spread ; if *negative*, it is noncontagious. Its benignity should depend on the results of the lepromin reaction *positive*, benign ; *negative* or *doubtful*, subject to close observation (*c*) the *simple polyneuritic form* with nerve-hypertrophy and muscular or trophic manifestations.

3. Next comes the very difficult type to be diagnosed with certainty, *viz.*, the *undetermined inflammatory type.* Always remembering that further studies may lead to the inclusion in this type of fresh additional clinical forms, we could for the present classify these (*a*) erythematous, erythemato-dichromic or hyperchromic macules with irregular or well-defined margins and without apparent loss of sensibility (*lepra incipiens* of old authors, *lepre fruste* of the French authors) ; (*b*) simple polyneuritic troubles, without cutaneous lesions, muscular or trophic atrophics, with or without trouble, especially if occurring in lands where lepra is endemic and provided that such manifestations are not definitely due to other causes (*suspected leprosy*). It is in such

cases more than in any other that all tests and researches including histopathology should be carried out in a well-equipped laboratory, in order to guide the leprologist in his diagnosis and treatment of such cases.

The policy of the sanitarian towards lepers.—The differentiation of the three main types of leprosy and their role in the dissemination of the bacilli and consequent spread of infection among contacts, have created new trends in our sanitary policy towards lepers. Some five years ago the treatment of leprosy—whatever might be its form—meant in every country provided with advanced sanitary services, the immediate and prompt segregation of the patient in a leprosarium or similar institution, with all the expenditure incidental thereto, (from the state's finances) and the social stigma attaching to the patient and his family. Nowadays the practical application of the principles already mentioned, render the anti-leprosy campaign more economic, more humane and more efficacious; (*a*) only the open, contagious, bacilli-spreading forms require segregation in hospital and (*b*) the non-infective non-contagious, cases, do not need any segregation and are treated, as out patients in the leprosaria.

Hence, the following procedure applies to the three types of leprosy :—

1. *All lepromatous* cases need isolation and appropriate treatment in special institutions—*Permanent segregation.*

2. The *tuberculoid* cases may be treated in the general dermatological wards, subject to the condition that *temporary segregation* in leprosaria will be made during the reactional period which any clinician can easily detect.

3. The procedure to be adopted in *undifferentiated* cases would vary according to the circumstances and individual needs.

(*a*) Bacterioscopy positive :—Hospital segregation and appropriate treatment.

(*b*) Bacterioscopy negative :—Conditioned freedom and treatment in general dermatological wards.

(*c*) Lepromin-reaction strongly positive or merely positive—observation at long intervals, say, twice a year.

(*d*) Lepromin-reaction negative or doubtful—*rigorous* and close observation every 3 months or less according to the discretion of the leprologist.

(*e*) Progress towards the polar lepromatous type :—Hospital segregation and treatment.

In a modern anti-leprosy service therefore, the number of special establishments—whatever be their form and organisation which will depend on the social status and means of each country *e.g.*,

leprosarium, hospital, agricultural colony, city of refuge, village of hope (two names which have lately come into common use in India) should be made to take in only the permanent or temporary contagious cases. What is urgently required is to multiply the *dispensaries* for the detection, ambulatory treatment and continuous observation of the patient himself and his contacts.

One particular precaution should not be ignored :—to avoid exhibiting in such *dispensaries* any specific label mentioning the disease treated there. This is for social and psychological reasons.

Needless to say that I am not dealing here with asylums for invalids and for the mutilated, courses for re-education, *creches* and so on, as these problems are obviously connected with the social aspect rather than with an anti-leprosy campaign.

Sulphone therapy in leprosy.—The introduction of sulphones in the treatment of lepers, constitutes the most striking advance in lepra-therapy and it is to be hoped that further advances will be made in this field to find more efficient and less costly products of this kind. Their action is more bacteriostatic than bactericidal. The fact is that the clinical amelioration evident, is sometimes even spectacular and precedes any bacillary reduction.

All types of leprosy are prone to benefit from sulphone treatment which is especially indicated in laryngeal and ocular complications, against which we were practically helpless in the past. *Lepromatous* cases can change under such treatment to *tuberculoid* ones.

We belive that the dosage, mode of administration and absence of side-effects depend on individual tolerance and should be carefully studied by the leprologist. For the present and until the cost of these drugs permits their generalised use in every country, sulphones must be employed only :—

(1) In all *lepromatous* cases and in cases where the lesions appear in the eyes and the upper air passages.

(2) In *tuberculoid* cases, when reactional stages occur. As their skin is highly reactive and is also tuberculoid, reactions may result from sulphone-therapy ; so it is recommended that the doses should be smaller.

(3) In *tuberculoid* and *undetermined lepromin negative* cases especially in the latter, when a change to a *polar lepromatous* type is noticed.

The doses to be employed should be determined after careful observation by the leprologist ; the following may however, serve as a guide for the treatment :

1. *Promin* :—Intravenous daily injection of 2 gr. in 5 c.c. of water. After 1–2 weeks, increase gradually till 12 to 13 c.c. of the above solution is reached. Continue the treatment during 1–3 months and then stop for one or to two weeks. Recommence again.

2. *Diasone* :—Oral administration. 1st week 0·3 (1 tablet) daily. 2nd week 0·6 (2 tablets); 3rd week 3 tablets; 4th to 10th week increase gradually till 10 tablets (1·8 gr.) daily is reached according to tolerance. Suspend treatment for 1–2 weeks after 2 months of continuous use.

Intravenous injection of 5 c.c. of a 3.3% solution (Chatterjee).

3. *Sulphetrone* :—Oral daily administration of 3-6 gr., beginning with a dose of 0·5 every 8 hours, increasing daily by 0·5 till 6 gr. per day is reached. For children half the dose of the adults. Continue for 6 months according to tolerance. Suspend for 1–2 weeks, after every 2 months' treatment.

Intramuscular injection of 10 c.c. of 50% solution twice a week (Cochrane).

4. *Thiosulphone* (*Promizol*):—Its use has been discontinued as the drug is difficult to get and is more expensive than the other sulphones.

5. *Promacetin* is exceptionally well tolerated by the oral route and is found to give excellent results. Dose : 2–3 gr. daily, maximum 4 gr.

6. *Diaminodiphenylsulphone* :—Active principle from which glucosulphone, sulphoxone and other sulphone derivatives secure their antileprotic activity. (Johansenn and Erickson). Oral or small intramuscular doses are given for avoiding toxic effects.

7. H.E.S.—Still in the experimental stage.

Other drugs being tried in leprosy :—I will here summarise the report by the Carville Leprosarium workers—I take this opportunity of rendering homage to their splendid work and fine hospitality—on the other modern drugs being tried there in leprosy.

Streptomycin 1 gr. daily intramuscularly is an excellent healer of lesions due to secondary invaders and seems also to possess some anti-leprotic properties.

Aureomycin in oral doses of 1 to 1·5 gr. daily for one year, was tried in 5 patients. Good results. Further trial needed on a larger scale.

Amithiozone (Tidione) - 4-acetyl-amino - benzaldehyde (Thio - semi-carbazone)—Bayer Lab. Daily doses of 200 mg. healed after 2 months severe ulcerative lesions of skin and mucosa. Further trial needed.

Para-amino-salicylic acid (PAS) as well as Lupulon (Betalupulic acid). So far, some regressive properties have been noticed. Further trials are needed.

Sevinon :—nil.

Antihistaminic drugs:—Results in erythema nodosum are far inferior to Stibophen (Fuadin) or to antimony and potassium tartarate.

Diphenhydramine hydrochloride (benadryl) 50 mg. daily. intravenously gave some symptomatic relief in erythema nodosum and and in the deep form of pruritus associated with leprosy, adding proof to the suspected allergic basis of these conditions (Johansen and Erickson). Cortisone was of some value in lepra reaction, lepra neuritis and leprous iridocytes.

What we can expect from the lepromin reaction in any anti-leprosy campaign:—Modern leprology has been enriched by a new test which, put into practice systematically, can give us precise indications both for the prognosis of the lepra patient and for the detection of the degree of immune-allergy among contacts: it is the *lepromin-reaction*, the Mitsuda's test—which I have myself used with great success.

Lepromin is an antigen containing lepra bacilli; but as the bacillus of Hansen has not yet been cultivated, on artificial media the antigen is prepared from lepra tissues rich in these organisms and may be used by all anti-leprosy services as an uniform antigen without the risk of *pseudospecific* reactions, due to cellular proteins.

The lepromin reaction to which I refer is the test of Mitsuda; the injection of 0·1 c.c. in the internal face of the arm or in the scapular region and verification of the reaction after 20, 40 and 60 days, constitute the test.

The notation which we follow is that of the Brazilian authors :- negative; + —dubtful (papule, erythematous nodule of 3 to 5 m.m. of diameter; + positive (papule, nodule or erythematous patch between 5–10 m.m.) ++ idem (the lesion of more than 10 mm.); +++ idem (the lesion shows an ulceration which takes often 3 months for healing).

In the interpretation of the results we use the above criteria; needless however, to say that new researches should be carried on for ascertaining definitely to what extent this antigen might give *paraspecific* reactions in non-lepers, sensitized by some other acid-fast bacillus *e.g.*, of Koch. Such a research is badly needed in view of the fact that recent experiments of Scuza Campes in Sam Pauls have shown that L. R. negative children have become positive after B.C.G. vaccination!

The following conclusions are therefore, justifiable in the present state of our knowledge :—

1. L. R. is an allergic phenomenon which is not of diagnostic value in leprosy patients but is valuable in prognosis. When *negative*, it indicates a severe infection liable to worsen progressively; when *positive*, it indicates an immuno-allergic power and consequently a resistance to the infection whose course will be benign.

2. The L. R. is *always negative* in the *lepromatous* type; in the *tuberculoid* and *undetermined* types L.R. *positive* is a sign of benignity.

3. The L.R. gives valuable evidence of immuno-allergy among children and contacts of lepers and also constitutes an invaluable guide in any epidemiological enquiry in lepra infected regions. L. R. seems to act like the Schick test in diphtheria: when *negative* it indicates susceptibility to infection; when *positive* resistance against the disease which, if contracted, will follow a mild course.

There is one other point about these *immuno-allergic-reactions* on which I have a suggestion to make:—

Having lately been in contact with countries where leprosy is widely prevalent, despite the best organised anti-leprosy campaigns all over the world, I am rather disappointed to see that leprosy does not show a tendency to decrease among these over-infested populations.

Without curtailing the measures we are taking today for wiping out this scourge, should we not perhaps follow another path also, trying in every research centre to cultivate different acid-fast organisms found in nature—if we do not succeed in cultivating the B. of Hansen—and especially in animals, in order to find some antigens with which we might as in the case of tuberculosis, vaccinate the susceptible population (L.R. negative) in a lepra-infested country?

The facts reported by the Brazilian authors, that a simple *reinoculation* of Mitsuda antigen has often transformed *negative* cases into *positive* ones and even into *strong positive* and the latest news that B.C.G. vaccinated children who before vaccination, were *negative* became L. R. *positive* after the BCG vaccination are indeed disquieting factors that have to be reckoned with. An active vaccination against leprosy is, perhaps, the most promising line for the control and eradication of leprosy, on which all leprologists should concentrate their researches and evolve a suitable vaccine similar to the BCG for tuberculosis.

The Pendulum and Pendulum-like Knee-jerks in Hemiplegia

"Pendulum knee jerks in hemiplegia are distinct from pendulum-like jerks." Bogolepov, reaches this conclusion on the results of his detailed study of 69 cases of the former and 32 of the latter. The *pendulum reflex* appears during the *early stages* of central paralysis and is associated with hypotonia, marked sensory disturbance, or some involvement of the cerebellum. The leg moves 6 to 8 times and the movements are relatively slow and diminish slowly and gradually in their amplitude !! *The pendulum-like jerks* appear at a *later stage* along with spasticity and clonus. The movements are repeated 20 to 60 times with a frequency of 1 to 3 per second and an amplitude of 40 to 45 degrees. They are associated with a combination of a pyramidal-tract lesion, with a disturbance of deep sensation.—(*Neuropath. Psychiat.*, 20, No. 1, 54-56, 1951).—*Eng. Abst.* by Crome in *Abst. W. Med.*)

THE USE OF INDIGENOUS DRUGS IN PSYCHOLOGICAL MEDICINE*

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PSYCHOLOGICAL medicine is full of paradoxes. Some of its special characteristics should be borne in mind, before the administration of drugs, either indigenous or foreign, is considered in mental illnesses—

(1) Many mental illnesses are self-limiting and have spontaneous remissions—No special drugs are required.

(2) While the brain is the anatomical sub-stratum of the mind in most mental diseases, the brain shows no structural defects, nor does its gross physiology show any deviations from the normal.

(3) Fixed types of response cannot be predicted from fixed types of stimuli. The same groups of stresses and strains might produce different types of mental reaction in different individuals, and *vice-versa*.

(4) Many signs and symptoms of mental patients, although appearing to be physical in character and really psychologically motivated, do not respond to drugs in the same manner as similar symptoms in general medicine. Thus, rigidity and lack of tone of muscles in schizophrenia, the numerous symptoms of the hysteric, the tremors and gastro-intestinal symptoms of the psycho-neurotic, do not disappear with drugs as in internal medicine.

All these complexities are due to the fact that mental diseases are not specific illnesses due to specific causes or particular micro-organisms, but are multi-dimensional. Hence there can be no *specific* treatment for mental disorders.

(Drug treatment of meningitis, neuro-syphilis, and other organic illnesses with mental symptoms do not enter into our consideration).

While the utility of drugs in the treatment of mental disorders is generally limited, a large group of drugs with mutually contradictory pharmacological properties, are used in the same illness at different times for the relief of various symptoms.

The most important are hypnotics and stimulants. Barbiturates and morphia and hyoscine derivatives are largely used. Serpentina affords relief in simple cases of anxiety neurosis, especially those associated with high blood pressure. Research should be directed to the manufacture of hypnotics whose characteristics are similar to barbiturates.

As regards stimulants, musk and camphor should function largely as the basis of synthetic drugs allied to coramine, and cardiazol. Benzedrine is usually employed for combating depression. The stimulant properties of drumsticks require investigation.

* Specially contributed to THE ANTISEPTIC.

Cannabis indica might be carefully *explored* for alkaloids that would allay agitated depression.

Drugs which would improve the tone of muscles in atonia, and reduce the tone in rigidity, would be of great use in neurology, and to a lesser extent in psychiatry. This is a large hitherto unexplored field. The belladonna group of drugs, and a few others like Ortane are being used in striatal disorders and tubo-curarine to reduce muscle-spasm. No specific drug is known which will increase the muscular tone.

Epilepsy is a wide field (the incidence being 1 in 200 of the population) wherein indigenous drugs should play a useful part. It is an ancient disease, and its drug treatment in Ayurveda should be interesting. The drug produced should be tested against an electro-encephalograph to find out whether it reduces dysrhythmia.

Psycho-somatic disorders which include high blood pressure asthma, urticaria, colitis, and other allergic conditions must almost certainly be amenable to some indigenous drug or other which would at least allay the signs and symptoms. The glory of Ayurveda lies in the fact that it was the first to emphasise the psychosomatic aspects of medicine.

Cortisone and ACTH now largely used in various conditions have probably also been foreshadowed in some of our ancient writings. Except for the use of electrolytes, blood or its substitutes, which are unsatisfactory, nothing is known about how to prevent peripheral shock.

No drug can supplant good food. Avitaminoses (pellagra, encephalopathies) show mental symptoms and in urgent cases concentrated vitamins have to be administered. These are highly specialised and technical problems in bio-chemistry.

Disorders of old age, and some behaviour disorders in children could be alleviated by simple indigenous drugs.

The question of cost enters largely into any drug treatment, and one of the most expensive in psychological medicine is the use of insulin and other chemicals to produce shock. The cost of insulin shock per patient per day works out to about seven rupees and the minimum cost for a course of fifty induced comas would be about Rs. 1000/-. This is a formidable figure for us in India. Only a fraction of the insulin molecule seems to be responsible for the hypoglycæmia, and one wonders whether this could not be produced by an equally potent but cheap indigenous drug capable of oral administration. Research in this direction might yield valuable results.

Drugs used to reduce psychological tension, and to facilitate abreaction in psycho-therapy *e.g.*, sodium pentothal, might have similarly acting counterparts among indigenous drugs.

So, more extensive and intensive research, greater publicity and a higher level of integrity amongst manufacturers of indigenous drugs in India are essential. In view of India's poverty, it also seems unnecessary to purify crude extracts to the level of western standard products, provided the other ingredients do not interfere with the pharmacological properties of the essential drug. Ox-bile, glycyrrhiza, and a few others have been suggested as sources for manufacturing cortisone and allied products. Various grams and pulses could be tested and utilised as sources for proteins and hydrolysates; germinated green gram is being used in the Mental Hospital at Bangalore in some confusional states with benefit.

It has also been my experience, that raw eggs in large quantities as many as twenty a day, other foods being restricted in the meantime, are found to be almost a specific in certain exhaustive states, associated with mental symptoms which, if left unchecked might lead to syndromes simulating anorexia, nervosa and Simmond's diseases.

These are suggested as possibilities which have to be explored in any scheme of indigenous drug research.

Treatment of Rheumatic Conditions with Sodium Salicylate and Para-aminobenzoic Acid

The use of a combination of para-aminobenzoic acid and sodium salicylate (Pabalate) produced significantly greater relief of pain and stiffness in 125 patients with a variety of rheumatic conditions while employing relatively lower doses than with sodium salicylate alone. It was thought that the increase in efficacy was due to the attainment of higher salicylate blood levels due to the retarding effect of the para-aminosalicylic acid on the urinary excretion of the salicylate and upon the synergistic antirheumatic action of the combination.

The combination was found to give longer pain relief than sodium salicylate alone and to be well tolerated and free from toxicity or adverse reactions. However, a 3 to 4 hour delay between ingestion and the therapeutic response became evident. This inadequacy was overcome by administering a delayed action sodium salicylate tablet at bed time or by taking a dose of plain sodium salicylate immediately upon arising in the morning.

According to Smith in *The Journal Lancet* (70: May, 1950) the dosage employed was 2 tablets, each containing 0·3 gm. each of sodium salicylate and sodium para-aminobenzoate, to give relief to 92 per cent of the patients comparable to the relief obtained with 0·6 gm. of sodium salicylate in 68 per cent and 1·0 gm. in 21·6 per cent of another group of patients.—*Medical Times*, Feb. '51.

CHEMOTHERAPY OF TUBERCULOSIS*

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THE subject of chemotherapy of tuberculosis has been one of the saddest chapters in therapeutics. Much of the gloom surrounding this subject has been dispelled by the recently introduced drugs. But these cannot claim a therapeutic status, comparable to that of penicillin in the treatment of pyogenic infections. Nor can it be said that the drugs so far available for therapeutic use can replace the surgical methods of treatment in vogue, for pulmonary tuberculosis. In the treatment of tuberculosis, the best known drugs at present are streptomycin, para-amino-salicylic acid and the thiosemicarbazones. Their anti-tuberculous activity, toxicity and the relative therapeutic status in the management of various manifestations of tuberculosis, will now be considered.

Streptomycin.—Extensive animal experiments have shown the value of streptomycin in induced tuberculosis. The results are striking in infected guinea-pigs. Even when the treatment is started some weeks after inoculation, it will still prolong the life of the animals. Post-mortem examination of such animals may show lesions but in an inactive form. In animals which survive as a result of early and adequate treatment, it is significant to note that occasionally virulent bacilli may be demonstrated even in the absence of any signs of infection. This is due to resistance of the organisms to the drug. Drug fastness is seen with other chemotherapeutic substances as well but is specially marked with streptomycin and may indeed, commence very rapidly. The bacteria become resistant by a mutation or more probably it may be that the susceptible strains are eliminated leaving the strains with natural resistance to survive and multiply. A maximum of 70% cases receiving streptomycin continuously for 3 months is found to have strains with a resistance ratio greater than eight. But recent studies have shown that combined therapy with PAS considerably reduces the chances of resistance occurring. It is always desirable to give PAS along with streptomycin, particularly when long courses of the latter are administered. Apart from the occurrence of resistance, another factor that limits its usefulness is its toxicity. The incidence of toxic reactions has become less as purer preparations have been made available. Four types of toxic reactions are usually seen :

(1) A histamine-like effect, which is mostly due to impurities.

* Specially contributed to THE ANTISEPTIC.

(2) Various allergic reactions like cutaneous eruptions, nausea, vomiting, leucopenia and rise of temperature. It appears from various reports that sensitivity reactions are often relieved by a temporary cessation of the drug, which may be continued after the symptoms have subsided but in gradually increasing doses with an anti-histamine cover.

(3) Nervous disturbances due to dysfunction of vestibular and auditory mechanisms. These appear after about three weeks of treatment. Recovery is not always complete. Dihydrostreptomycin appears to have less tendency to induce vestibular disturbance.

(4) Renal irritation, which is manifested by albuminuria and cylindruria.

It seems probable that streptomycin has both bacteriostatic and bactericidal actions on the tubercle bacilli. High concentrations are certainly bactericidal but this can be achieved with safety only in local therapy and in the treatment of urinary infections. It has been observed that in the case of streptomycin, the bacteriostatic effect persists for some time, even after the blood concentration falls below the optimum level that was maintained for a considerable time. This observation however needs confirmation. The exact mechanism by which the drug produces its effect on the bacilli is not known for certain but there is evidence to suggest that the effect is concerned with the metabolism of nucleic acid, which the drug inhibits. While assessing the therapeutic status of the drug, it should be stated that in the treatment of tuberculous meningitis and miliary tuberculosis, streptomycin is the only chemotherapeutic agent available at present, with sufficient potency to induce a satisfactory response in at least some of the cases. In meningitis, it has to be administered intrathecally also to achieve maximum effect. It is definitely of value in tracheo-bronchial ulcerations and in tuberculous sinuses. It appears to be valuable in tuberculosis of the alimentary tract and in tuberculous peritonitis. The value of oral administration of the drug in such cases however, requires to be more fully investigated. In pulmonary tuberculosis, the exudative lesions and thin-walled cavities respond to the treatment, while fibrotic lesions do not. Minor changes are produced in thick walled cavities and fibro-cavernous lesions. Favourable results are reported in the treatment of tuberculosis of bones and joints. In tuberculosis of the genital tract, it is a valuable adjunct to other methods of treatment but in established caseo-cavernous lesions, it has little or no effect.

Para-amino-salicylic acid (PAS).—The discovery of this drug is related to the fundamental work on the metabolism of the tubercle bacilli. As benzoic acid and salicylic acid increased the oxygen intake of the bacilli, indicating their possible use as metabolites, attempts were made to find out whether structurally related compounds would inhibit the bacterial metabolism by substrate competition. PAS was found to be the most active of such

compounds. The activity of the drug is mostly bacteriostatic. It is possible that the drug alters the pulmonary tissue reactions from the exudative to the proliferative type by its action on the enzymatic mechanism of the bacilli. It is also shown that PAS has a mild antipyretic effect by producing peripheral vaso-dilatation. The advantages of PAS in the chemotherapy of tuberculosis are:—its suitability for oral administration and its low toxicity, which permits its administration in relatively large doses without ill-effects. Rapid excretion is a disadvantage but this can be overcome to some extent by the simultaneous administration of caronomide. Administration of the sodium salt has the advantage of reducing the chance of formation of a conjugated product, which is therapeutically inert. As already stated, toxic reactions are comparatively rare. When they do occur, they take the form of gastro-intestinal irritation, 'salicylism', albuminuria and occasionally hæmaturia. It should *not* therefore, be given when there is generalized disease of nephrons. Normoglycæmic glycosuria is occasionally seen. Hypoprothrombinæmia, cardiac arrhythmia and muscular cramps are complications. Acute miliary and meningeal tuberculosis do not benefit by PAS therapy. It is of definite value in the exudative forms of pulmonary tuberculosis. It is also useful for local instillation in tuberculous empyemata, fistulae and lymphoma. Drug resistance may be seen in prolonged cases of treatment. PAS along with streptomycin considerably reduces the chances of drug fastness due to the latter. The use of PAS alone would appear to have its chief indication in streptomycin-resistant cases or in those cases showing toxic reactions to streptomycin.

Thiosemicarbazones.—These compounds were first investigated by Domagk and his co-workers, who demonstrated their activity against tubercle bacilli both *in vitro* and *in vivo*. These can be administered orally, parenterally and locally. Out of these compounds *p*-acetamido-benzaldehyde thiosemicarbazone (T B.I. 698 or Conteben) has been subjected to extensive clinical trials. The most active and least toxic of these compounds (to mice) is the thiosemicarbazone of *p*-ethyl sulphonyl benzaldehyde (Compound 8388). It allows a high blood concentration and is slowly eliminated unchanged in the urine. Persistence accounts for high chemotherapeutic activity. Toxic effects of thiosemicarbazones are many and severe. These include gastro-intestinal irritation, cutaneous eruptions, granulocytopenia, and hæmolytic anæmia. Liver damage and encephalopathy have also been recorded. In diabetes, the insulin requirements are increased while the drug is being administered and it is also shown that it may have a strange and disturbing effect on E.S.R. Many of these reactions can be avoided by careful dosage but it appears that the drug has a greater potential toxicity than streptomycin or PAS. In fixing the dosage the type, extent and stage of the tuberculous process have all to be taken into account. Small quantities of about 25 mg. are given daily to begin with and

the daily dose is gradually increased to as much as 200 mg. (generally 2 mg. per kg. of body weight). Most reports indicate the necessity of extending the period of treatment over a period of 3 to 12 months. Miliary tuberculosis and tuberculous meningitis are not satisfactorily controlled. In pulmonary tuberculosis, recent cases of the exudative type respond remarkably well. Cavity closure and sputum conversion occur in a good proportion of cases. Intra-cavernous treatment may be of value in progressive cavernous cases. Tracheobronchial, laryngeal, intestinal and genito-urinary forms also respond fairly well. Good results are also obtained in some forms of bone and joint affections. The result of extensive clinical trials would show whether drug-resistance would be a limiting factor in therapy and whether combined therapy with streptomycin would delay as PAS does, the emergence of streptomycin-resistant tubercle bacilli. The results of these studies will be keenly watched with interest.

References:

1. Robson, J. M. and Keele, C. A.—'Recent Advances in Pharmacology,' (1950).
2. Joseph, A. D.—'Recent Therapeutic Remedies', Antiseptic, January, (1950).

Sore Throat in General Practice

Landsman *et al* made a carefully controlled clinical study of the epidemiology and best method of treatment of "sore throat". This study is based on 100 patients with sore throat as the leading symptom. Throat swabs showed a normal flora in one third of the patients; a rich growth of beta hæmolytic streptococci was found in another third; a few colonies were seen in 22 per cent and a moderate growth of beta hæmolytic streptococci in 14 per cent of the patients. The authors consider therfore, that less than half (only 46 per cent) can be traced to a streptococcal origin. This observation is important, as it is a common misapprehension that acute tonsillitis almost always implies a streptococcal origin. About one fourth of the streptococcal cases were not exudative.

26 of the 100 patients were given (0·5 g) sulphanilamide, 26 were given 0·5 g. sulphatriad and 43 were given lactose tablets. The results of the therapeutic trial did not support the thesis that sulphonamides exert a beneficial or curative effect in the treatment of acute tonsillitis. Neither of the sulphonamide tablets was appreciably superior to the plain lactose tablets which was presumably inert therapeutically. The average duration of fever and pain in those treated with lactose was exceedingly short *viz.*, 1·07 and 1·95 days respectively. The authors conclude that in the treatment of acute inflammations of the tonsils, the use of sulpha drugs is not only of no value but is needlessly expensive and perhaps subject also to known definite risks.—(*Br. Med. Jour.*, 1, 326–328, 1951).

GARGOYLISM*

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THE following is a study of a case of gargoylism :—A boy 1½ years of age; vegetarian; middle class.

COMPLAINT.—(1) "Delay in learning to walk and speak." (2) "Bending of the back bone." Since his early months the child was noticed to lag behind in physical and mental development.

PREVIOUS HISTORY :—Mother's pregnancy and labour normal. Feeding history uneventful. Vaccinated in the 9th month. The milestones of development were all delayed. At present the child is attempting to get up with the help of a support and is lisping.

FAMILY HISTORY :—Parents are first cousins. This is the first child; mother died subsequently after the second child birth.

CLINICAL:—The child is physically and mentally underdeveloped and his behaviour is amiable and not offensive. A coarse and ugly featured child with hyperteloric facies, and dry scalp hair, well-developed teeth, smoky conjunctivæ, and clear corneæ. The head is large with frontal bossing and patent anterior fontanelle. Extremities are thick and short. No cyanosis. A downy growth of hair is seen all over the body and particularly over the spine. Lumbar kyphosis present. Abdomen is protuberant. Liver ¾" and spleen ½" below the costal margin. Height of the child 27½". Weight 16 lbs. Circumference of the head 18". Chest 17"—16½".

INVESTIGATIONS :—*Urine* :—No sugar or albumin or ketone bodies or bile salts or bile pigments.

Blood :—Reds 4½ millions. Hæmoglobin 75% and colour index 0·83. White cells total 26,000 per cm.m. Differentially :—polymorphs 77%, lymphocytes 21 %, mononuclears 2 % and eosinophils 0%. Kahn test of mother's blood negative.

X-RAYS :—Skull :—The anterior fontanelle is patent. Pituitary fossa is normal. Spine :—Lumbar vertebræ appear abnormal. Wrist :—The phalanges are broadened and short. Two ossific centres are seen in the carpus.

DIAGNOSIS :—Infantile rickets, congenital syphilis, achondroplasia and Perthes' disease are out of consideration in this case.

The presence of hepato-splenomegaly rules out Morquio's disease and hepatomegalia glycogenica (Von Gierke). Hepatic cirrhosis was ruled out after observation, for some months. After nearly eleven years the child is found to be the same ugly-featured, backward boy with hepato-splenomegalia. Height 4 ft. 2½ inches. Weight 50 lbs. Liver ½" below ribs. Spleen palpable; squint present. Thyroid treatment useless and cretinism is eliminated further by ossific findings normal for the age.

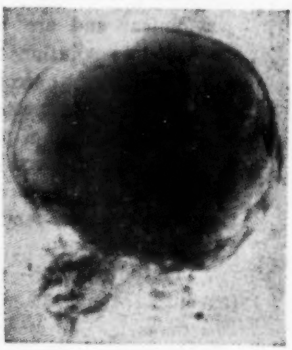
* Specially contributed to THE ANTISEPTIC.

Comment.—Gargoylism was diagnosed on the following: (1) Large head and hyperteloric facies; (2) corneal opacities; (3) hepato-splenomegaly; (4) hook-like deformity of lumbar vetebræ; (5) elongation of sella tursica; and (6) certain other skeletal changes like broadened phalanges, accentuated bony ridges etc. The case reported, however, has no corneal opacities nor marked changes in the spine and sella tursica. The bony changes in this child, though not well marked, are those of chondro-osteo-dystrophy in a child of consanguinous parentage. Some observers associate hypothyroidism with gargoylism, and in this case thyroid did no good after continuous use for three months.

While Ashby and others associate gargoylism with lipoidoses, Ellis found lipoid infiltration of liver and spleen, on biopsy of his cases. An undetermined lipoid substance has been reported in the soft tissues and in the liver, spleen, anterior lobe of pituitary and corneæ.

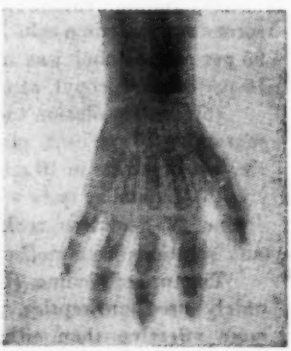
A boy of 1½ years. Straight view.

Side view.



Skull: lateral view. (Frontal bossing and patent anterior fontanelle seen).

Lumbar spine: X-rays.



X-rays: Wrist AP view: short and broad phalanges, and 2 carpal centres seen.

References:

1. Sheldon W.—Diseases of Infancy and Childhood (1946).
2. Ashby, W. R., Stewart R. M. and Watkin, J. H.—"Brain," 1937, 60: 149.
3. Ellis, R. W. B.—"Gargoyliam," Proceedings of the Royal Society of Medicine (March 1938), Vol. xxxi, Part II, p. 770.
4. Dinkar Rau, G. R. and Sarma, A. V. S. —"Gargoyliam," Indian Medical Journal, Vol. 134: 11; 1940.

Disinfection of Clinical Thermometers

In a search of the literature on methods of disinfecting thermometers Gershenfeld *et al* of the Department of Bacteriology, Philadelphia College of Pharmacy and Science found only an occasional published study on the use of chemicals for the cold disinfection of clinical thermometers. It was therefore deemed advisable to study and evaluate the efficiency of some readily procurable compounds to be recommended for this purpose. The study was conducted on the commonly used iodine preparations and various alcoholic solutions—compounds which are readily available, are economical and are often used as disinfectants. The compounds used were iodine solution 2 %, iodine tincture 2 % (U.S.P.), 95% alcohol, 70% alcohol, ethyl alcohol (50% by volume), isopropyl alcohol (70% and 50% by volume respectively). Sections of clinical thermometers immersed in 24 hour-cultures of pathogenic bacteria, with and without 25 and 50% citrated human blood plasma, and dried in the incubator at 37°C were then immersed in the different test solutions (of the disinfectants mentioned *supra*) for varying periods of time. The results of the tests were as under :—

(1) Iodine (both solution 2% and tincture 2%) and the alcohols (excepting the 95% alcohol) killed streptococcus hæmolyticus within *20 seconds*.

(2) Iodine (solution 2% and tincture 2%) killed Str. fæcalis in 100 seconds but the alcohols took 120 seconds to kill it.

(3) Iodine preparations killed the E. coli more quickly than the alcohols.

(4) Iodine tincture (2%) killed staphylo aureus, within 80 seconds while iodine solution (2 per cent) required 120 seconds to kill. 95 per cent alcohol was ineffective even after 10 minutes' contact while 70 per cent isopropyl alcohol killed S. aureus in 4 minutes.

(5) Iodine solution took 5 minutes to kill S. aureus in a culture containing 50 per cent plasma. The other test solutions did not kill the test organism in 10 minutes.

(6) In similar tests with 25 per cent plasma + S. aureus culture, iodine (2%) solution took only 3 minutes to kill, while other disinfectant solutions were ineffective in 10 minutes.

Tincture of iodine (USP) or iodine solution (2 per cent) (N. F) widely used antiseptics, readily available everywhere were found to be more effective than either ethyl alcohol or isopropyl alcohol for the rapid and quick disinfection of clinical thermometers which were heavily infected with many of the commonly found infective bacteria.—(*J. Am. Pharm. Assoc.*, 40, 9 : 1951).

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Digestion test:
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After-treatment of infectious intestina diseases, such as bacillary dysentery, typhoi fever, amoebic dysentery.

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DIVES INTO ANCIENT HINDU MEDICINE

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(Continued from page 374 of May '51 issue).

Section V. Some Reflections and Conclusion

'Masurika': what the term denotes.—William A. Jenkins, A.M., M.D., while discussing the history of measles (Practice of Medicine, Edited by Frederick Tice, M.D., Vol. III), says: "The following are some of the sources to which it (the etymology of the word 'Measles') is traced: from 'Maselen' (Dutch); from 'Maseru' (German); from 'Masura' (Sanskrit), masura meaning 'spots'....." Although Sanskrit-English Lexicon do not annotate 'Masura' as 'spots', the etymology of the word 'measles' is interesting; perhaps, 'masura' like many a hoary (and age-long ?) Sanskrit word, has philologically evolved itself into measles through 'maseru' first, then 'maselen' and finally measles.

According to Apte's Sanskrit-English Lexicon, 'Masura' or 'Masoora' means 'a kind of pulse'; 'Masuraa' or 'Masooraa', 'a lentil'; and 'Masoorikaa' or 'Masooree' 'a kind of small-pox'. It is quite possible that masoorikaa or masooree (or our 'masurika' has derived its name from the pulse masura obtained from the lentil masuraa by virtue of a large number of 'poxes' in masurika resembling the lentil-pulses, some time in the course of the disease. If so, the term masurika cannot be exclusive and applied to small-pox alone, but should be inclusive and comprise all "poxes" (or "eruptive diseases" —Chambers Dictionary) whose efflorescences some time or other in the course of the disease largely resemble lentil-pulses. Be it noted too, that masurika has been annotated as 'a kind of small-pox' and not as 'small-pox'—a fact which in itself is very suggestive of 'masurika' not being synonymous with small-pox.

The foregoing would make one infer that the term 'masurika' was not, at its inception, conceived to connote what is strictly small-pox, but intended to include and indicate a group of eruptive affections that formed an entity by themselves, was regarded as caused and influenced by extra-mundane agencies, and exhibited certain set and distinctive features of symptoms, course and end-results. Such affections now go by the name of "Exanthemata". The disease 'masurika' may therefore be defined as an exanthematous fever with eruptions and other features depending on the causative factor (or the nature of the 'Dosha-Koapa') that predominates in any given case.

The principal 'masurikas' known to ancient Tamils and so to ancient Hindus (with due respect to the respectivists among 'self-respecters'!) were 'Peria-ammai' (Small-pox), 'Chinna-ammai' or

'Neer-koluvan' (Chicken-pox)' 'Raamakkan' (Measles), and 'Manal-vaari' (German measles ?) ; possibly there were many others too, classified or not. It should be borne in mind that, although the different exanthemata have distinctive appellations, all belong to the generic group of affections called 'Ammai', generated in the course of the seasonal 'Leela' or play of 'Ammai-Thaayaar' (the entity that 'mothers' exanthemata—"Ammai"=Exanthemata ; 'Thaayaar'=Mother). Therefore, 'Amma' like 'Masurika' is an all-embracing term and an appellative for the whole group of exanthemata.

[*Manal-vaari* : (*vide* also 'Varaaha-lochanan' under Poozhi-kkalloori in Section III). This comparatively innocuous exanthem is essentially a disease of childhood, fully (if not more than) 90% of cases occurring below 16 years of age but with children very much more frequently affected than infants. Prodromal symptoms are next to *nil*, the chief one being a rise of temperature which is moderate in most cases and never reaches what would cause serious disturbances. The fever is not a constant feature, may follow the eruptions, and in some cases may be absent throughout. Slight coryza, mild cough, some indisposition etc., may be present at the onset of the disease. The rashes appear within 24 hours of fever, if any. In many instances, the eruption is the first symptom to attract attention, the prodromal fever being mild and other symptoms too mild to attract notice—the pre-eruptive abnormality being generally attributed to some cold or the very convenient *Influenza*. With the appearance of rash, there usually occurs an exacerbation of symptoms which however is never marked. On the other hand, a defervescence in the symptoms is sometimes noted with the appearance of the rash. The discrete tiny rose-red pin pointed macular efflorescences resemble small flea-bites and being skin-levelled are not felt by the fingers. They cover practically the whole body giving it the appearance of what would follow if fine sand heated to burn the skin moderately were strewn or scattered all over. In fact, the affection has received its name from the appearance of its rashes—'Manal'=sand ; 'Vaari'=strewn or scattered, The rashes begin to fade after 24 hours and completely disappear when they begin to desquamate after another 24 hours. Between their appearance and fading, they may rarely become papular passing through the maculopapular stage, and reach the size and shape of a 'masura' (split or a split-pea). The disease is short-durationed, lasting usually for 2 to 4 days.

The chief diagnostic difficulty is in distinguishing it from measles. Fortunately, difficulties will arise only in the initial stages, before the appearance of rashes ; the rashes, when they appear, will have distinctive features ; and the courses differ in the two affections. The prodromal symptoms in manal-vaari are, as a rule, mild ; and, in many a case, only a rise of temperature

will be present. The rashes appear on different days of the patient falling or feeling ill—generally within 24 hours in manal-vaari and on the 4th day in measles. When they appear, the discrete, tiny, rose-red spots seen in manal-vaari will show differently from the minute red closely-placed triangular elevations on a less red areola witnessed in measles. In later stages, the rashes in measles coalesce to form large and irregular splotches over the surface of body giving the latter a blotchy appearance, while the efflorescences in manal-vaari remain discrete till the end albeit they may increase in size. And lastly, manal-vaari is short-durationed and usually runs an agreeably mild course.

The above is a short description of 'manal-vaari' in its typical form. A comparison of the above with the present-day text-book descriptions of German measles (Rubella) will show that the one so closely resembles the other that the one may be said to be the other.

The following are from the tabulated "Differential Diagnosis of Rubella, Rubella and Scarlet Fever" by William A. Jenkins in Tice's Practice of Medicine, (Vol. III), and give a succint description of rubella: "Prodromal symptoms: Often absent (?), Mild catarrh, sore throat, cervical glands enlarged almost constantly.' Time of eruption of appearance: 2nd day; Face or upper part of trunk. Appearance and development of eruption: Eruption polymorphous. Common type; resemble measles; spots are not so red nor so large, evenly distributed; no groups nor clusters. 2nd type macular, faded rose colour; size, pin-head to finger-nail. Eruption disappears in 2 to 4 days..... Constitutional symptoms: In average cases, very little if any. *Fever*:—Very slight as a rule, beginning a few hours before the rash; reaches its highest point as rash comes out: *Desquamation*:—Usually hardly preceptible; may show as fine scales. 3 to 5 days. Complications and sequelæ: In the average case, none.....".

The same author writes in the same discussion: "The history of this disease is shrouded in confusion on every hand..... The macular type (the spots varying in size from a pin-head to that of an adult finger-nail, and exhibitting a faded or old-rose colour) may some day be distinguished as a separate disease....."

Causative factors.—Some of these have been already mentioned in Section I. The following on the 'etiology' of 'Visphota or Visppota' and Masurika are from Maadhava-Nidaana:

['Visphota' is annotated by Apte as "Tumour, Small-pox." But the description of the eruptions and other features of'Visphota' in both Maadhava-Nidaana and Yoga-Ratnaakara indicate that the affection is an eruptive disease with blebs and bullæ predominating, and with all chance of including such affections as pemphigus whose characterestic is to form blebs or bullæ. One Malayalam Commentator of Yoga Ratnaakara has identified Visphota

with Neer-Polakan or Chicken-pox (Neer = fluid; Polakan = bubble). Though this may not be fully warranted, it is certainly more logical and 'scientific' to consider visphota as chicken-pox and not as small-pox—especially since the term masurika covers small-pox and is more in consonance with that affection than the term Visphota].

Mundane agencies.—According to Maadhava, addiction to a predominantly pungent, sour, alkaline, harsh, or sharp diet in contravention of the principle of balanced 'shad-rasa' diet; habitual consumption of foods prone to ferment or putrefy; gluttony, especially loading of stomach before the organ has unloaded itself of the previous load, leading to production of noxious products of partial or ill metabolism; undue exposure to sun; un-congenial seasonal variations; living a life not befitting the needs of the time or the environment—these and allied unhealthy conditions disturb the body-equilibrium through vitiating the 'tripods' Vaata, Piththa and Kapha singly or in combination. The vitiated element or elements succeeding in getting a foot-hold in the 'Thwak-Dhaathu' encroach on and, in due course, affect the other dhaathus like blood, flesh and bone; and the combined vitiations find a way out through the eruptions they produce [1].

The same author writes about masurika as under:—Habitual consumption of foods that are predominantly pungent, sour, saltish, or alkaline; partaking of meals containing mutually incompatible foods (*e.g.*, a prepared dish of fish and milk, or taking in of fish and milk at one sitting); eating decayed articles; gluttony, including frequent meals; breathing of foul air; drinking of bad water; adverse influences of planets astrologically—these and their like upset the 'tripods', the vitiations thereof vitiating the blood in due course. The poisons circulating in the system cause masura-like eruptions to appear all over the body [2].

[It is clear from the above that the direct or immediate cause of masurika is some poison 'incubated' in the body and circulating in the blood. It is also clear that deleterious foods or bad dieting may develop a poison in the system, or the poison may be introduced into the system from outside *via* the foul air one breathes or

1. "*Katu-amla-theekshna-ushna-vidaahi-rooksha—*
Kshaarair-ajeerna-adhiasana-aathapai scha
Thiththa ritu-doshena viparyayai scha
Kupyanthi doshaa: pavana-aadi-asthu
Thwacham-aasrithya thai raktha-maamsa-astheeni pradooshyacha
Ghoraan kurvanthi visphotaan sarvaan jwara-purasaraan".
(Maadhava Nidaanam. Visphota-Nidaanam, verses 1 and 2).

2. "*Katu-amla lavana-kshaara-viruddha-adhiasana-asanai;*
Dushta-nishpaava-aakaadiyai: pradushta-pavana-udakai:
Kruddha-grahi-eekshana-ad-yaa api dosha doshaa: samuddhathaa:
Janayanthi sareeras-asmin dushta-rakthasra samgathaa:
Masura-aakrithi samsthaanaa: pitikaa: syur-mascorikaa".
(Maadhava Nidaanam, Masurika-Nidaanam, verses 1, 2 and 3).

the bad water one drinks; in other words, the 'infection' may be zoo-genus or contracted. The following digression will be relished by seekers of useful knowledge from any quarter, and may benefit the corrigible among the scoffers of things old.

According to Bhagavaan Dhanwanthari, 'Krimees' (noxious organisms) *in the body* ('Abhiantharam')—in contradistinction to those *on the body* ('Baahyam')—are of three main types *viz.*, Pureeshajam, Kaphajam and Rakthajam (generated in ordure, 'Kapha', and blood respectively). Krimees of Rakthajam class trace their development in blood to the intake of mutually incompatible foods, foods that do not agree, or foods like greens and leaves that cause indigestion.[3] The organisms are very minute, circular in shape and coppery in colour (because of being soaked in blood ?), and own no organs of locomotion. Some of these are invisible to the naked eye. (!) Dhanwanthari enumerates 6 varieties of 'Rakthaja' and says that they are all chiefly concerned in the causation of 'Kushta' or their likes [4].

Susrutha, the disciple of Dhanwanthari, in his description of the genesis of 'Rakthajaas' repeats the words of his preceptor "Viruddha–ajeerna–saakaadiai: Soanithoththaa bhavanthi hi." It is however in the description of the 'morphology' and the propensity for mischief of these organisms that the *Sishya* or student of a later age excels the *Guru* or the teacher of a previous period. According to Susrutha, the organisms of this class (*i.e.* rakthajaas) are reddish or darkish in colour (depending on the arterial or venous nature of blood ?), cohesive or adhesive ('Snigdha') and abundant in quanta ('Priththava')—to aided vision (?) [5]; they are all invisible to the naked eye [6]. They are directly or indirectly responsible for most of the diseases and disorders generally attributed to vitiated blood or blood-poisoning[7]. The rakthaja-group of organisms, like the kaphaja —and pureeshaja–groups, is composed of diverse main kinds, each main kind holding a number of sub-kinds with different forms and features, depending on the sites of their foot-holds and strong-holds in the host's body [8]. There are 7 main kinds of 'rakthajaas' described—the kesaadaas and roamaadaas, injuring the hairs on the scalp and body respectively; the danthaadaas and nakhaadaas, harming the teeth and nails respectively; the kikkisaas, causing tinglings, ticklings, itching and the like sensations with no obvious

3. "*Viruddha-ajeerna-saakaadiyai: soanithoaththaa bhavanthi hi.*"
4. "*Raktha-vaahi-siraa-sthhaana-rakthajaa janthavo-anava:*
A-paadaa vriththa thaamras-cha soakshmyaal kaechid-adarsanaa:
** * * **
Shat thaa kushtta-eka-karmaana.....".
(Dhanwanthari, Krimi-roga-adhikaara, verses 6, 12 and 13).
5. "*Thaa sa-rakthaascha krishnaascha snigdhaascha priththavas-thaththaa*".
6. "*Kesaadaadyaa: thu a-drisyaa.....*"
7. "*Raktha-adhishttaanajaan prayo vikaaraan janayanthi thaa,*"
8. "*Krimeen bahu-vidha-aakaaraan karoathi vividha-aasrayaan*
Aama-pakwa-asaya thaasthaam prasaa: praayasa: smritha:"

lesions, probably due to the organisms affecting the sensory nerve-endings about the skin; the Kushtajaas, those born of 'kushta' and circulating in the blood; and the Paree-Sarppaas, probably those produced by or/and producing visarppa (creeping spreading itch)[9]. The features common to all disorders caused by 'rakthaja' organisms are fever, discolouration of body-complexion, colicky pain about epigastrium, asthenia, giddiness, anorexia and diarrhœa [10].

The salient features in the above writings of Maadhava, Dhanwanthari and Susrutha are:—

(1) In masurika, at least, breathing of foul air (disease-producing air) is as much responsible for the production of the disease as drinking of bad water or unhealthy dieting—leaving aside the astrological vicissitudes for the moment. In other words, the causative factor or poison, in some affections of the masurika has been known to be 'air-borne'; and exanthemata may have belonged to this group.

(2) The blood, mainly in masurika and in combination with other dhaatus in visphota, is vitiated; in either case, the 'dooshya in raktha' or the poison circulating in the vitiated blood has been known to be the factor that excites the disease masurika or the disease visphota.

(3) The dietetic errors that contribute to the development of masurika are almost identical with those that induce growth of 'rakthaja' organisms in blood—thus, while the errors in masurika are "Virudha adhi-asana asanai: Dushta-nishpaava-saakaadiyai:", those in the rakthaja formation are "Viruddha ajeerna-saakaadiyai". Being so, it may reasonably be asked if masurika is not a later consequence of dietetic errors, and is directly caused by the virus or organisms produced in the blood as a first result of errors in diet; or, at least, if the disease is not a resultant of dietetic errors *cum* the organismal products of such errors thrown in the blood. In this connection, the verse "Raktha-adhisttaanajaan praayoa vikaaraan janayanthi thae" meaning "The organisms staying in blood produce diseases akin to those produced by vitiated blood, in due course" is important to bear in mind. Taking all the above into consideration, it would appear that the ancient writers—Susrutha at least—considered masurika proper (or small-pox and other exanthemata) as a disease of organismal (or germ) mischief —or infection! But alas, the trinity in Aayurveda—Charaka, Susrutha and Vaagbhata are, for reasons of their own, severely silent on exanthemata.

(4) The rakthaja, 'creatures', according to Susrutha, are all of them non-macroscopic, proliferative, and cohesive or adhesive

9 "*Kesa-roma-nakha-aadaascha danthaadaa: kikkisaa: thaththaa Kushtajaascha paree-sarppaa: jneyaa: soanitha-sambhavaa:*"

10 "*Jwaro vivarannathaa soolam hrid-roga: sadnam bhrama: Bhaktha-dwesha: athisaarascha sanjaatha-krimi-lakshnam:*"
(Susrutha, Uththara-Sththaana, Chapter 54, verses, 14, 17, 14, 4, 13 and 16).

(forming clusters or chains?); they cause symptoms analogous to those of blood-poisoning, and produce toxæmic septicæmic or pyæmic manifestations depending on the foot-holds or the strong-holds they create for themselves in the human host; and we shall under the heading 'Infectivity' see that the mischiefs they work are communicable. One wonders if these are not identical with the modern findings on microbes and their activities!

(5) It has been discussed and found that masurika is not synonymous with small-pox. The subject under discussion does not warrant a discourse on *kushta*. Suffice it to say that *kushta* is not identical with leprosy, but is a wide term applied to 18 or more different affections with skin lesions predominating. Dhanwanthari says that rakthaja organisms cause *kushta*—"Shat thae kushtta-eka-karmaana:"; Susrutha says that organisms born of kushta spring in blood—"kesa-roma .... kushtajaa-scha....soanitha-sambhavaa:" One may reasonably infer that, in kushta, the organisms cause the disease, which in turn breeds the organisms—even as the egg produces the fowl which in turn breeds the eggs. The imaginative reader inclined to ponder is left here in the vista of speculatory past to meditate on and find for himself if the savants of ancient Hindu Medicine knew aught, naught or all about microbes and their activities as understood today; and to discover if they knew the role played by the non-macroscopic organisms in the causation of masurika, especially the exanthemata—and if so, to what extent.

Extra-mundane agencies.—In discussing the history of small-pox, in Frederick Tice's Practice of Medicine (Vol. III), Samuel Sidney Woody, M.D., says, "The disease was also known to ancient India, the inhabitants of which are said to have worshipped a Goddess Patraglia who presided over the small-pox". My respects go to the author for the latter's earnest labours. But, I am also reminded of an odd incident of my college-days when an English-born lecturer, during a roll-call, miscalled a student called 'Aapado-uddhaaranam' by the misnomer of 'Appaatharai-annaan,' and caused the whole class to burst into laughter. The error about Patraglia is never so revolting as the error in the annotation of 'Yoni' as "the pudendum muliebre, the symbol under which Sakti is worshipped in India" (Chamber's Twentieth Century Dictionary). Evidently, the Goddess Patraglia refers to the Goddess Bhadra-Kaali of the Hindu Mythology, an allegorical and mystic representation of Prakrithi—the totality of "aakrithees" of "bhaavaas", forms and moods respectively in Nature or creation—in one such form and mood. And be it noted that, the term 'bhadra' meaning auspicious, happy, kind, lovely and such like, Bhaadra-Kaali is a representation of Prakrithi—rather of Paarvathi, the personified "thamo-gunaie" or austere and nemesic aspect of Prakrithi—in one of her desirable moods and features, while the stern

nemesic "Kaali the Dark" is the embodiment of relentless and retributive justice.

A reference to the previous sections will show that the Kerala savants had some appointed Devathaas, named by them 'Maruthaas', presiding over each of the 18 main groups in three, varieties of masurika—Vaata, Piththa and Kapha). 'Marutha' is perhaps a derivative of "Maaree" which means "a plague, a pestilence; the goddess supposed to preside over epidemics."

It has been already mentioned that neither Charaka nor Susrutha nor Vaagbhata had made more than a passing reference to masurika or visphota in their respective works. The only treatise in Ayurveda that, to my knowledge, discusses the affections in some detail is Yoga-Ratnaakara. After discussing masurika proper, I discuss a modification of masurika in a separate chapter titled "Masoorikaa-bheda-seethala-adhikaara"—Section on 'Seethala', a modification of masurika; and this chapter contains information on the influence of extra-mundane agencies on at least modified masurika. And, it is interesting to observe that Apte annotates "Seethalaa" as 'Small-pox; the goddess that presides over small-pox'—(compare 'Maaree'). According to the author of Yoga-Ratnaakara, the masurika generated by the 'stepping upon' of the goddess 'Seethala' is called "Seethala"; Seethala is among masurikas what vishama-jwara is among jwaras (fevers); and vishama-jwara, according to the ancient physicians, appears when some 'Bhootha' (spirit) 'possesses' the patient [11].

On the possible existence of 'spirits' and such like, suffice it to mention here that, even as the invention of the microscope opened the vision of the 'scientist' to the existence of microbes, newer and newer inventions of atomic instruments for wars on the one hand and the rockets and telescopes for contacting the moony in the Moon or the martial in the Mars on the other, may enable some future scientist to get at the means of 'splitting space'; and then perhaps the extra-mundane beings will be revealed to those in the mundane.

Seasonal prevalence.—Under treatment in Section I, mention was made of the advice about certain precautionary measures to be observed during the expected periods of masurika; the mention of the "expected periods" emphasises that the people of the land were accustomed to and knew of the annual timing of the outburst of masurika.

Whatever may be said to obtain in other parts of the world, what obtains in Kerala is that masurika, as a rule, puts in its appearance and is prevalent in the hottest parts of the year, *viz.*, during

11. "*Devyaa Seethalayaa-aakraantha-masoori-eva hi seethalaa :*
Jwara eva yathhaa Bhootha-adhishtithoa vishama-jwara :"
Yoga-Ratnaakaara, Part III, Masoorikaa-bheda-Seethala-adhikaara, verse 1.

February to June—to be more precise, from a few days after the Hindu festival of Mahaa-Sivaraathri to a few days after the onset of the monsoon. It has been my experience in my limited practice that, conditions being normal, acute fevers have a periodicity depending on the three well-cut seasons: (1) The rainy or monsoon, from about the middle of June to about the middle of October —from the break of monsoon to about the full-moon-day between the Nava-raathri (Dusserha) and Deepaavali-raathri; (2) the dewy or frosty, from the middle of October to the middle of February—from between Navaraathri and Deepaavali to Mahaa-Sivaraathri; and (3) the hot or summer, from about the middle of February to about the middle of June—from Mahaa-Sivaraathri to the break of monsoon. The affections that are by far the most common in "summer"—from the middle of February to the middle of June—are general and respiratory types of influenza, pneumonia, exanthemata and 'hæmopustular' skin-eruptions—diseases affecting the respiratory tract and the skin, both concerned with heat-regulating mechanism on the one hand and excretions of gases and water vapour on the other. And the curious phenomenon has been observed by me that the two groups of affections—skin and respiratory—follow an inverse ratio in their prevalance in any one year. The theme will be found developed in my discussion on 'Fevers in Ayurveda'.

The above were the conditions obtaining till a decade or a decade and a half ago. Since then, there is some change observed in the situation. The exanthemata seem to have developed a tendency to appear bi-annually—the first appearance being in the hot months as usual, and a second bout appearing in the months of September and October; thus there are now in my locality a good number of cases of measles and "pox", cent per cent of "pox" cases brought to my notice having been cases of frank varicella what has caused the change is too early to surmise. Probably, it is due to a widely disturbed condition in the 'atmosphere' consequent on the thunderings and lightnings during the last war and the events in the 'Gobi Desert'—China. And, time alone can record the effect on human diseases of the 'atom bomb experiment' at Bikney.

Communicability.—A reference to the main sections, especially Section IV, will show that our ancients had mentioned about and cautioned against the spread of all masurikas. In this connection, the following from Susrutha will be read with interest as it reveals the knowledge by the ancients in India of the nature and cause of communicability of diseases—at least of certain types of diseases. The author says: *Kushta* (a group of skin affections), Jwara (fevers), Sosha (Kshaya, possibly consumption with emaciation), Nethra-abhishyanda (discharging eye affections), and like "oupasarggika-rogas" (portentous diseases) spread from person to person. ("Naraan-naram") through sexual intercourse, personal contact or contact *via* air, commensalism, sharing of same bed or

seat, and wearing of same garments, garlands and such like.[12] And "Oupasarggika-roga," according to another ancient savant, signifies masurika, granthi (tumour, probably includes tuberculous or syphilitic adenitis or such infectious swellings), Visarppa (spreading skin disease), Upadamsa (sores on genitals), Kandu (a form of leprosy), and such like—"Masoorikaas-cha romaanthyow grantheer-visarppa eva cha upadamsas-cha kandu-aadyaa oupasarggika-samjnakaa:"

Immunity.—Exanthematous fevers in general and variola in particular have from times long past been considered benign in one respect—in that one attack confers immunity to the individual against subsequent attack by the same disease; however, I have seen a few cases of measles and chicken-pox having attacked the same person more than once, and at least one sure case where frank small-pox appeared in the same individual twice.

Prophylaxis.—The most sensible and the most economical (and perhaps the "should-be-the-easiest-but-is-the-most-difficult") way of preventing infective ailments consists in warding off or eradicating "Poverty and squalor", both within and without and both near and far. Poverty and squalor create conditions affording pabulum for "isms" and schisms and for diseases and disorders to thrive. But the acquisitive man must get "heavy" instead of becoming light; and in the process should offend the co-creatures and so should seek armours against counter-thrusts. And vaccination against small-pox is one such acquisition of acquisitive man.

Vaccination.—Samuel Sidney Woody, M.D. while discussing 'vaccinia' in Frederick Tice's Practice of Medicine (Vol. III) writes: "The precursors of Jenner's protective prophylaxis against variola date back to ancient and medieval times....The most primitive type of such variolation is that practised by the Chinese, who mixed the crusts of variola pustules with musk, wrapped them in cotton, and after they had been kept for years and treated with vapours of all kinds and with medicinal herbs in order to attenuate their virulence, were inserted into the nostril of the patient to be protected.....Somewhat more logical was the Brahmin (! T.S.A.) manner of variolation practised in India. This consisted in introducing the material from a variola sore into the skin on the upper arm by means of a needle, making fifteen or sixteen scarifications and covering the scarified area with a tuft of cotton which had been dipped in variola material, and sprinkling it with holy water from the Ganges river. The pock-material

12. "*Prasamgaat gaathra-samsparsaat nisvaasaat saha-bhojanaat*
Saha-sayya-aasanascha-api vasthra-maalya-anulepanaat
Kushtam Jwaras-cha soshas-cha nethra-abhishyanda eva cha
Oupasarggika-rogaas-cha samkraamanthi naraan-naram."

(Susrutha, Nidaana-sththaana, Kushta-nidaana, verses 24 and 25).

used was always at least one year old and was taken from an inoculated individual, not from a case of spontaneous small-pox. The patient was obliged to remain in the open air and to avoid intercourse with his fellow-men, and to restrict his diet to fruits, rice and light food.....Needle puncture was also the method used in other Oriental countries.....The first accounts of the Oriental mode of variolation came to Europe through the writings of a Greek physician, Timoni.....It was reserved for Edward Jenner, a simple country doctor, to present to a waiting world the ideal prophylaxis against small-pox....."

The statement has been made that "Prophylaxis against variola is comprised in one word—vaccination". This may hold good in places where poverty and squalor are also controlled adequately. In other cases, carrying out of vaccination is akin to the caravan's carrying of goods to places to where they can but be ill-delivered. But, the mule and caravan will pass although the gods and dogs may bark!—as in the case of B.C.G. commodity with the faddists in the caravan shouting "a single inoculation will confer permanent immunity".

A reference to the annual reports in the *Medical Annual* and like journals will show that small-pox, in spite of strict vaccination, raises its head now and then, especially when some disaster like war affecting the "peace and prosperity" of the people descends on the land. The position at present seems to be that among the populace with a civic conscience, the small-pox when it puts forth its appearance appears in a mild and attenuated form with symptoms so diverse from those of its parent that "namers of diseases" have begun to suggest the names of "alastrim" etc. for the "variola mitigata" of to day. And, perhaps, a couple of decades or more hence and when the nomenclature has become fixed the student will be confronted with one more of the kind in the group of exanthematous fevers!

Production of hybrid ailments and multiplication of diseases have been the cause and in turn the result of enthusiasts losing sight of the fundamental, *viz.*, that the same disease-producing-entity will bear diverse 'fruits' depending on the host's cell-life and the environment. While discussing the seasonal prevalence of exanthematous fevers, it has been mentioned that the season in general is the season of respiratory and skin affections—affections born of mal-exchange of fluids (gases and vapours) between the body and the exterior. Being so, it will be useful to know if in any locality and at the given season, the decrease in the incidence of small-pox is or is not accompanied by an increase in the incidence of other eruptive fevers in particular and other seasonal affections in general. If it comes to be statistically proved that decrease in the small-pox incidence does not affect the incidence of other affections peculiar to the season, vaccination can be deemed a real boon to

mankind; otherwise, it effects but a make-shift arrangement in the manifestation of diseases, as it leaves the seasonal disease-provoking-entity free to manifest its mischiefs in other ways and through other diseases. In this connection, the following by W. H. Wynn, M.D., F.R.C.P., in the *Medical Annual*, 1932 (pages 365 and 366) will be read with interest. "It is a matter of common observation that pneumonia has within recent years altered in type. The classical lobar pneumonia is not so often seen, and modified forms associated with mixed infections are prevalent. This change apparently has occurred since the great influenza epidemic of 1918–'19. The recognition of the change is obviously important in connection with specific prophylaxis and treatment. D. Ordman emphasizes on this point in an interesting study of the history of pneumonia on the Witwatersrand gold-fields during the last two decades. In the earlier part of this period a frank lobar pneumonia with the classical crisis in recovery was commonly seen. In the event of death supervening, the lungs showed the familiar consolidated lobes, and from the latter a pure culture of the pneumococcus was almost invariably isolated. This organism in some 70 per cent of cases belonged to Lister's groups 'A', 'B', and 'C'. Experimental prophylactic inoculation on a large scale with the pneumococci of the ascertained groups commenced in 1916, and in 1917 mass inoculation of nearly all the native mine workers was established as a routine. Following this prophylatic inoculation new groups of the pneumococci appeared, while the original groups 'A', 'B', and 'C', disappeared. Coincident with the eradication of the pneumococcal strains that were prevalent in the un-inoculated virgin community, the incidence and mortality-rates due to lobar pneumonia showed a striking decrease. As time went on, the finding of new heterogenous strains of the pneumococcus became increasingly common. It was necessary then from the point of view of prophylaxis to keep pace with the new infecting agents and incorporate them in the vaccine as far as possible. From 1927 onwards, however, the pneumococcal type of pneumonias came to be less common. Other organisms, streptococcus pyogenes, B. influenzæ, staphylococcus aureus etc. were found in addition to, or in place of the pneumococcus. In view of this change in the bacterial flora, it is not surprising that at the same time the efficiency of the prophylactic vaccine designed to protect against a pure pneumococcal infection was found to have diminished." What is surprising is the still-clinging-to-the-surface by others in other regions! Fortunately, the still-redeeming feature about small-pox vaccine is that it is still mixed and complex, and is made to hold no pure 'A', 'B' and 'C' viruses or '1', '2', '6' components (*Cf.* Vitamin B 'complex').

The necessity for re-vaccination bespeaks of single vaccination affording no permanent protection—contrary to what was conceived at the inception. The pendulum now swings the other way, and one witnesses re-vaccination done every six months in rare instances

and every year in many! Whether such frequent exhibitions of vaccine-protein is healthy or not is best left to be decided by statisticians among immunologists and allergy-specialists. Suffice it to remind the reader here of the limitations of the antibiotic streptomycin and the waywardness of pneumococcus cultures (mentioned in the last paragraph). If such erratic features are to be exhibited by close and frequent re-vaccinations, one may be prepared to witness even an attack by 'alastrim' conferring no permanent immunity to the individual.

TREATMENT:—There has been no revolutionary change since the first era of medicine. Administration of cooling 'oushadhas', care of the eyes, relief to symptoms, attention to complications, and prevention of sequelae constitute the chief indications for treatment even today.

A reference to some measures in "Aththarvedic" mode of treatment and a comparison of them with these modern modifications may not be out of place (Aayurveda is a progeny of Aththarveda).

It would appear that "Maari" or "Marutha" and "Seethala," the deities presiding over pestilence and small-pox respectively are both fond of and get becalmed by things red. The "Poojarees", the priest-physicians ministering to the 'deities' and the 'disease' spare no efforts in keeping the patient environed by red. They wear red clothes, strew the floor with red powders (having disinfectant and deodorant virtues), adorn the room with red flowers (that are not odoriferous) and otherwise keep the surroundings red. Samuel Sidney Woody writes: "The effect of the colour red in the form of hangings and curtains about the patient has been known since the early thirteenth century. Finsen, in our time, applies the method in form of **red light treatment**.....He places the patient in what is practically an un-ventilated photographic dark-room, from which all but the red rays are excluded. Indeed some authorities think it necessary to test the glass that is used in order to make certain that no other light enters. The mental effect on the patient confined in such a room is shown in psychic disturbances, restlessness and delirium.....Dreyer attempts to overcome this undesirable effect by excluding the actinic rays more directly by the use of dressings saturated with permanganate of potash, which gives the red colouring and at the same time acts as a disinfectant and deodorant.....".

Reference has been already made to strewing the floor with red powders and the like that have definite disinfectant and deodorant properties. Another means of sure and healthy disinfection and deodorisation is through the "Homas" or consecrated fires that, in a way, serve the purpose of modern fumigation to produce gaseous disinfectants that will permeate the entire room and the

surroundings, the added advantage of the psychic influence on the patient wrought by the various elements in the consecration.

The writer has read somewhere that the microbes—the aerobic ones—get inactivated in an atmosphere surcharged with noise and glare; perhaps, the radio-active and subtler waves roused by noise and glare prove inimical to microbial activity! Whatever be the reason, if noise and glare do inactivate the microbes, the "wise" men and women of today will think twice before ridiculing the Poojari's performances with his torch and drum in other manœuvres.

The interested reader, if earnest and conceit-free, can gather much useful information from the hereditary Poojaarees (the Aththarvedic physician-priests) who are still humble as of yore.

A few dont's in exanthemata:—(1) Reference has been already made in Section I to the mal-influence of courting by young couples and amorous affairs in "exanthematous homes".

(2) Hoary but downy grannies in Hindu homes are very strict in their injunctions against diffusion of perfumes from whatever source in and around 'exanthematous homes'. Also, they are very strict that no odour of oil, ghee, and the like should permeate the house; in 'foggish' homes, the usual oil-baths and roastings, and fryings will be conspicuous by their absence. The *raison d'etre* for the above, though not known now, will be made known sooner or later.

(3) Hair-dressers have no admittance in Hindu homes with exanthematous patients. The hairs may be clipped, but not shaved. The reason perhaps is to avoid possible cuts and injuries very apt to afford ingress to the infesting agent.

(4) During exanthematous season, it will be advisable not to exhibit on fever-patients drugs that have a tendency to cause drug-eruptions; such drugs are better avoided in toto in the early stage of the fever and till the would-be pre-eruptive period in case the fever proves an exanthematous one is long past.

[The references to Fredrick Tice's Practice of Medicine found in this article are from the 1924 Edition].

Sulphonamides and Tonsillitis

Another controlled experiment in the Royal Air Force Community was carried out by MacDonald and Watson on the efficacy of sulphonamides in the treatment of 82 cases of acute tonsillitis. The cases were divided equally into treated and control groups. 50 tablets (25 gm.) of sulphatriad were given to each patient in the treated group and each patient in the control group received 50 lactose tablets. All had bed rest and copious fluids. Analysis of clinical records revealed no difference between the 2 groups in regard to the speed of recovery from temperature, œdema, exudate, pain and adenitis. The authors conclude that the findings do not warrant the routine use of a potentially dangerous drug such as sulphatriad in the treatment of acute tonsillitis. Other methods should be used to improve the well-being of the patient, if the difference of recovery is only a matter of hours.—*Br. Med. Jour.* of 17-2-1951, pp. 323-25).

AN INTERESTING CASE OF POST-MEASLES FEVER

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BABY, P. B. S., aged 2½ years was brought for examination on 22-3-'52 for fever and cough of five days' duration.

CLINICAL HISTORY :—The patient's father gave a history of an attack of measles on 11-3-'52 with a previous history of fever for 3 or 4 days. The fever subsided on the 4th day after the appearance of the rash. The child was given a bath 2 days later *i.e.*, on 18th March '52, and on the same evening she got fever again. The temperature remained throughout the day and night up to 102°F or 103°F. The maximum rise of temperature was in the afternoon at about 4 p.m. Cough was present but without much expectoration. The patient had little difficulty in passing urine on the day of the fever which subsequently subsided by itself. She was a little constipated and was passing stools once in two days. Appetite was lost and the sleep disturbed. There was no vomiting.

PAST HISTORY :—There was no history of any previous illness except for a slight cold and fever once or twice which had subsided with treatment for a day or two. There was no history of any other infectious diseases like whooping cough, diphtheria, etc.

FAMILY HISTORY :—There was no history of chronic disease in the family. No history of syphilis or tuberculosis. The patient's two sisters and a brother have been quite healthy. There was history of one abortion at three months in the family.

CLINICAL FINDINGS :—The patient was fairly built and fairly nourished. One could see the pigmentation from the eruption of measles on the body. She was slightly irritable. The temperature was 100·4°F. There was no œdema of the face or legs. No skin lesions were present and no enlargement of any glands.

On examination, the abdomen was slightly doughy to the feel, but there was no tenderness or swelling. Liver was two fingers palpable but normal in consistency. It was not tender. Spleen was not palpable. There was some distention in the bowels.

Respiratory system.—Breathing was quite normal; the rate could not be counted as the child was crying. Chest wall was normal on both sides. On percussion there was no area of dulness anywhere. Note was resonant throughout. Auscultation revealed breath sounds to be quite normal. However, there were bronchitic signs on both sides. No other abnormality could be detected.

Nervous system.—Showed no abnormality. Neck rigidity was not present and the pupils were reacting normally to light. Jerks were all present and Kernig's sign was negative.

Throat was slightly congested. There was no enlargement of tonsils. Tongue was slightly coated and dry. There was no discharge from the ears. Genital organs appeared quite healthy.

TREATMENT :—Alkaline expectorant mixture with Sulphatriad ½ tablet every 4 hours was started on 22-3-'52, Next day the temperature shot up to 103·5°F. in the evening and the patient was a little delirious. Injection of procaine penicillin (4 lacs) intramuscularly brought down the temperature to 99°F. within two hours, and the patient was more restful. Next morning the temperature was 100°F., whereupon the parents were asked to start with (penicillin) oral tablets of 1 lac units each, every four hours day and night. The bowels were emptied by a glycerine suppository. In the evening the temperature again went up to 101·5°F. Urine was examined but showed no abnormality except for slight albumin. On 25-3-'52 Terramycin (half capsule) every six hours was started along with oral penicillin. Thereafter, the temperature became intermittent, the maximum rise occurred early in the morning and late in the evening. It used to remain normal for two or three hours in the morning usually after 8 a.m. and again in the evening after 7 p.m. or so, when the temperature came down, with slight perspiration. In view of this and also since there was no further improvement with the above treatment for two or three days, Camoquin (1/3 tablet) twice a day was tried for four days to eliminate malaria. There was no change in the condition.

Clinically, the patient's general condition had improved a little during these days. Cough had completely subsided, bowels were moving quite normally once or twice a day. Examination of the chest showed no bronchitic signs but there was a small area of harsh breathing on the right side of the inter-scapular region at the back. On 30-3-'52 streptomycin (0·25 gm.) intramuscularly twice a day was started. In addition, alkaline mixture and vitamin C (50 mg.) three times a day were given. The rest of the treatment was discontinued. Within 24 hours *i.e.* after two injections of streptomycin the temperature came down to normal and remained subnormal thereafter. The same treatment was continued. On 2-4-'52 screening of the chest showed lung fields to be clear. Hilar regions were normal. The area of harsh breath sounds at the back was still present. The doughy feeling of the abdomen had disappeared. The patient was more cheerful, the appetite had improved and she had restful nights. She was put on full diet. Streptomycin (0·25 gm). twice a day was continued for another two days and then stopped. In all two grams of streptomycin were given. The patient was quite normal till 5-4-'52.

On this evening she again showed a rise of temperature to 99°F with a slight cough. Clinically there were no other signs. She was put again on alkaline mixture and sulpha-co-metis (1½ tablets) four times a day, and streptomycin (0·25 gm.) twice a day was also started again. Even after two days, there was no improvement and the fever shot up to 102°F and did not touch normal at any part of the day. The patient also lost her activity and refused to take feeds except barley-water, tea and a little sweet lime-juice. Sulpha drug was stopped at this stage and only streptomycin (0·25 gm. b.d.) continued. Alkaline mixture and vitamin C were also given. This treatment was continued for eight days but there was no improvement at all, except that the range of temperature showed a lowering and remained between 99°F and 100°F. Only anorexia was present. On 9-4-'52 it was decided to have a second screening done as also an examination of the blood and tuberculin patch test. But the parents wanted to postpone these investigations for a day or two. They shifted the child to the house of one of their relatives about two or three miles away. All treatment was stopped. Surprisingly enough the temperature touched normal on that very evening. The patient became more cheerful and started taking food. She has been quite well ever since.

Conclusion.—It is difficult to understand the nature of this fever. It is known that intermittent or continuous fevers do keep on for days after an attack of measles in children. There may or may not be any signs in the system but usually cough is almost always present probably due to a continuation of the virus infection in the lungs. I have in my practice found that this kind of fever without any definite clinical signs, usually responds to one of the antibiotics like terramycin, aureomycin or chloromycetin, failing which it almost always yield to streptomycin in a day or two. But in this particular case, though there was no response to sulpha drugs and penicillin, there was some amount of response to terramycin, in the sense that the temperature which used to be continuous came to normal for some hours in the mornings and evenings and the maximum range was also lowered. With streptomycin, the improvement was more marked as the temperature subsided within 24 hours and remained so for four or five days. But when the fever recurred, streptomycin failed to act. However, the temperature subsided when all treatment was stopped and the patient changed to a better climate (?) and new surroundings. It is just possible that this change produced a psychological effect on the patient, and secondly the fear of injection and medicines was relieved. The cure might have been due to a combination of these psychological factors.

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ROLE OF STREPTOMYCIN IN PLAGUE

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PLAGUE is almost endemic in and about Gauriganj; every year there is a serious outbreak during the later months of the winter season; cloudy and wet weather predisposes to a heavy mortality among rats followed by a gradual increase in the incidence of plague in humans. I treated 13 cases of plague in 1950 and noted the following observations :—

Five of the 13 occurred in Hindu adult males who developed unilateral enlargement of right inguinal glands; they had received no prophylactic inoculation; the cases were indigenous. Temperature in all cases was below 103°F. The patients were conscious; no delirium or toxæmic manifestations; soluble; (M & B) sodium sulphadiazine 4 gm. with 10 c.c. of glucose solution 12½% was given intravenously every day for 3 days; 25 c.c. of a 25% glucose solution and 2 c.c. vitamin C were given b.d. intravenously. Also 2 tablets every 4 hours of a special plague formula supplied by the U. P. Health Department were also given; in all 8 tablets a day. An ointment was rubbed on the glands b.d. followed by the application of dry heat. This treatment was continued for a week, when 3 cases were successfully treated with incision of the suppurated buboes. Two succumbed to toxæmia.

Four cases of the 13 were adult females, one Muslim and three Hindus all with enlargemant of the right inguinal glands and having severe toxæmia. Temperature ranged between 102°F and 104°F. There was severe prostration accompanied by headache, body ache and nausea. Patients were all conscious. The cases were all indigenous and not imported. The treatment given was on the same lines as above. Two recovered and two died. All the 4 cases were uninoculated. The remaining 4 cases were children under 12 years of age: 2 boys and 2 girls: all uninoculated and indigenous; with temperatures ranging between 102°F and 103°F; they had severe headache and bilious vomiting. The two boys (brothers) had bilateral cervical gland involvement while the two girls from different families had their inguinal glands affected. The treatment was on the same lines, with 2 gm. of sodium sulphadiazine (soluble) and glucose b.d. and glucose solution and vitamin C, special plague tablets and bubo ointment as usual. Both the boys and one of the girls died while the other girl alone recovered. The bubo was later incised in the course of the treatment.

Seven of these 13 cases died and the rate of mortality was more than 50 per cent. During 1951, there was again a seasonal outbreak of plague and in a series of 9 cases which I treated with dihydrostreptomycin, I obtained amazingly marvellous results.

The infection in 1951 was alarmingly heavy with a larger number of seizures, than in 1950. The rat mortality was however, smaller than in 1950 which was certainly a somewhat puzzling factor.

My 9 cases comprised of 3 adult men, 4 adult women and 2 female children under 12 years of age. All of them were treated with streptomycin. One adult male, died as he came in very late for treatment. All the three men had right inguinal affection; 2 women had axillary and 2 other inguinal while both the female children had inguinal affection. All the patients had very severe toxæmia and the temperature ranged between 107°F and 104°F. The morning remission in all cases ranged between 101° and 102°F. The patients were all unconscious and delirious during the febrile period. They even jumped out of their beds and so required to be strictly watched by an attendant all the time. There was severe headache polydypsia and intense nausea; they brought out chocolate-coloured or meat-wash mucus with a very offensive odour.

The following treatment with streptomycin (dihydro) Pfizer, was given :—

(1) Dihydrostreptomycin 0·5 gm. in 2 c.c. distilled water for adults, was given b.d. for 3 days and one gm. divided in 3 equal doses was given in 1 c.c. t.d.s. to children under 12 years.

While sulphadiazine did not bring down the temperature to normal even after pushing 16 to 20 gm. in the 13 cases treated by me in 1950, I found that a single injection of 0·5 gm. of dihydro-streptomycin brought the temperature to normal within 6 to 8 hours in my 1951 cases. In this connection a little incident is worth relating. The relatives of one patient woke me up in the night at about 1 a.m. stating that the temperature had fallen down without any perspiration. People here have a wrong notion that the temperature should go down only with much sweating. I satisfied them saying that they should not worry about it as the injection given at 6 p.m. in the evening had wrought the miracle. (2) Simple diaphoretic mixture was given every 4 hours.

℞	Liqr ammon acet	.. ℥ i
	Sodi bicarb	.. grs. x
	Sodi citras	.. grs. x
	Sodi acetus	.. grs. x
	Spts aeth nitrosi	.. ♏ x
	Aqua chloroformi ad	.. ℥ i

(3) 25% of 25 cc. glucose solution with 2 c.c. vitamin C was given I.V. b.d.

(4) Bubo-ointment supplied by the U. P. Health Dept. was applied on the bubo and lightly bandaged.

(5) Menthol ointment rubbed for the headache.

(6) Eau de cologne mixed with water applied to forehead.

(7) Liquid diet with fruit juices (lemon, orange) glucose water, whey, milk and ovaltine was given while temperature lasted and semi-solid diet after gradual improvement had set in.

Points of interest in the two series

1950 Cases	1951 Cases
(1) Temperature in all cases was below 103°F.	(1) Temperature in all cases was above 103° rose even to 107°F.
(2) Bilious vomiting.	(2) Typical offensive choçolate or meat-wash vomit with mucus.
(3) No severe toxæmia; patient conscious and not much delirious.	(3) Severe toxæmia : (*i*) Patient unconscious; and (*ii*) very delirious and jumping out of bed.
(4) Even 16 to 20 gm. of sodium sulphadiazine did not bring the temperature down to normal in some cases.	(4) A single dose of 0·5 gm. of dihydrostreptomycin brought the temperature down to normal in most cases.
(5) The temperature touched normal often 2–3 days of continuous injection therapy.	(5) In 6 to 8 hrs. after injection the temperature touched normal in most cases.
(6) The death-rate was high (54 per cent.)	(6) The death rate was low; (only 11 per cent.)
(7) There was a heavy rat mortality and comparatively less seizures among men.	(7) A smaller rat mortality and a large number of seizures among men.
(8) No axillary and pectoral enlargement of glands noticed.	(8) Axillary and pectoral affection of glands observed.
(9) All were indigenous and uninoculated cases.	(9) Here also all were uninoculated and indigenous cases.

I have submitted these notes for publication in order to bring to the notice of my brother practitioners, the successful results obtained by me with Streptomycin (dihydro) in the treatment of 9 severe cases of plague and to request them to record their own experiences and findings for the benefit of others, through the columns of this Journal.

Extract of Liquorice for Addison's Disease

Groen *et al* report the case of a patient with Addison's disease who improved clinically and biochemically when given 15 to 30 g. of liquorice extract daily. He however had a relapse when treatment was stopped. This confirms a previous observation made in 1950 by Borst *et al* of Belgium that liquorice contains a substance with a deoxycortone-like action on oral administration.—(*Abst. W. Med.*, 10 : 2, 1951).

The Antiseptic

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NEW SCHEMES AND POLICIES OF THE MADRAS GOVERNMENT

THE present Government under the leadership of Shri C. RAJAGOPALACHARIAR has given out its policy during the budget discussion and in the budget proposals with regard to some of the pressing problems facing the medical profession. We are glad to note that provision has been made for the expansion of the medical colleges at Guntur and Madura. This is as it should be, for these colleges have come to the stage when clinical courses have to be followed by students and it is very necessary that adequate provision must be made for the expansion of the hospital and for teaching facilities. We congratulate the government on this decision.

The problem of admission into professional colleges has always been a sore point. We have always felt that merit should be the only criterion. But the previous government had for some years advocated admissions on a communal basis and thus sacrified merit to other considerations. The present government also appears to follow the policy of its predecessor in this matter, as it has ordered the reservation of a certain percentage of seats, for scheduled castes and tribes and the rest to be selected by a committee after interviewing the candidates; to the marks obtained by the candidates will be added some marks for sporting activities, belonging to the national cadet corps, ability and suitability of the candidate and other factors. We have always objected to this procedure; for there is no gainsaying that this will give room for favouritism and for complaints regarding the selection. However fairly the committee may discharge its duty, accusations are bound to be made. We, however, hope and wish that this may not occur.

We find that in the matter of admissions, no provision has been made for doctors' children and this is certainly not a welcome decision. For years we have been advocating that reservation of some seats, must be made for doctors' children on the ground that the investment made by doctors should not be allowed to be wasted and therefore, we have pressed the claims of doctors' children. The present government evidently does not subscribe to this view. They have however, given up the seats they used to reserve to themselves for the purpose of admitting children of Government servants and others. This is a wise move, for the Government will no longer be accused of being partial to certain candidates.

The decision of the government to abolish the L.I.M. course will not be welcomed in many quarters. For over 15 years the Indian School of Medicine has done useful work, training candidates in Indian Medicine and providing medical men at a cheaper cost. These licentiates who have settled down in rural areas and in the mofussil have done very well and have contributed considerably to medical relief. Why the present government should have decided to abolish this course is however, beyond our comprehension. They have retained of course, the costly G.C.I.M. course which in our opinion is not a wise move. Why should a student who is made to study for 5 years after passing his Intermediate examination be denied the privilege of becoming a graduate (M.B., B.S.) ? Why should he be sent to the College of Indian Medicine ? We have a shrewd feeling that the G.C.I.M. is being made so difficult that in course of time nobody would care to take that course. Even the existing products of the G.C.I.M. will naturally and in our opinion correctly too, claim equal privileges with the (M.B., B.S.) graduates for entering government service and their request to be given post-graduate training in Ophthalmology, Radiology, Venereal Diseases and Tuberculosis cannot be turned down. For, this request is born of a natural and genuine desire on their part to study modern medicine and to equip themselves still better.

We understand that government are now considering a proposal to start a course similar to the old L.M.P. For years, we of 'The ANTISEPTIC' led by its editor the late Dr. U. RAMA RAU have carried on a campaign for the abolition of the L.M.P. and for the retention of a single graduate's degree. But it has been found that graduates are not willing to settle down in rural areas. The reason is obvious. The pay and emoluments given to them are very very poor. It would be unfair to expect a doctor after spending so much of time and money for his arduous medical studies to settle down in rural areas on the meagre salary and allowance that the government gives them with little or no prospect of augmenting this poor income by decently remunerative private practice, such as would be possible in urban areas. The government we presume, therefore, want to start a cheaper

medical course to enable all the rural dispensaries and health units to be fully manned. We are inclined gradually to agree to their new proposal in view of the paucity of medical men in the mofussil. We presume the government will institute this new course of studies, akin to the old L.M.P., the preliminary general educational qualification being fixed as the S.S.L.C. and the course to be of a duration of 4 years to be undergone in an approved medical school. We hope the government will see to it that suitable and adequate training is given to these medical men and proper standards are maintained.

We are confident that the RAJAJI Cabinet will always strive to do whatever is good for the people. They have just got a vote of confidence from the legislatures and we do hope they will remain in office and continue to do good to the people of our State.

THE NUTRITION RESEARCH INSTITUTE : COONOOR

(The proposal to shift it examined impartially)

WHEN the establishment of this Institute was first contemplated nearly 35 years ago, by the Indian Research Fund Association, various sites for its location were considered, including, Madras, Bangalore, Coonoor, and other places in India, the choice ultimately fell on Coonoor after, we believe, deep and careful consideration of the relative merits of the several places. The plea that finally weighed with the sponsors and the then authorities-in-power would appear to have been that the Pasteur Institute of Southern India which was already functioning at Coonoor was ideally located in a bracing cool climate so essential for the carrying out of valuable researches involving feeding and other experimental work of a highly technical nature. It was also then contended that even from the point of view of the research workers themselves, the bracing cool climate and the quiet surroundings at Coonoor were infinitely better suited in every way than the hot and sweltering climate of the plains and that the scientists could concentrate better and do more sustained research work for longer hours in that excellent atmosphere surrounded by lovely scenery and aesthetic environs. The absence of many centres of social attraction and diversions, was considered an additional factor conducive to efficient research. These arguments naturally prevailed and Coonoor became the seat of the Nutrition Research Laboratory in 1918 ; and it has had its headquarters at the Pasteur Institute, Coonoor almost continuously since 1918. But in the year of grace 1952, climate has been relegated to the scrap-heap and it has now been proposed to shift the laboratories from their present location to Hyderabad (Deccan) and the representations made by the Government of the Madras State against the proposal to shift it from Coonoor, have apparently not been

heard; from the interpellation in Parliament the other day by Sri C. R. NARASIMHAN, M. P. and the reiteration by the Health Minister in her reply of the three reasons which weighed with them in the consideration of the proposal to shift the Institute we note that the Centre is determined to go ahead with their intentions. The paucity of adequate accommodation for housing the Institute at Coonoor, "an alleged isolation of the work done by the Institute from other activities in allied sciences", inadequacy of clinical facilities in and around Coonoor for obtaining suitable material for research and for the application of the findings of research to human subjects are the three ostensible reasons adduced. None of these three however appeal to us, to be sufficiently convincing or justifiable to warrant the transfer. The alleged isolation of the work done by the Institute is a particularly flimsy reason, in view of the fact that with all the modern rapid communications and other facilities available, the research workers cannot complain of being unable to compare notes and exchange ideas and knowledge with other scientists both in India and in other countries and that the change of the venue from Coonoor to Hyderabad of all places will not help any better in destroying this isolation that is alleged to exist preventing the exchange of notes and knowledge! If more clinical facilities are considered absolutely essential for extended nutritional research, why then should Madras City not be considered quite as suitable as, if not even better than Hyderabad, unless it be that as in 1917–'18 personal opinions and equations are allowed to prevail!

For 34 long years, this excellent Institution has been there and can it be now said in the face of the outstanding and brilliant classical researches of Col. MACCARRISON and Dr. AYKROYD which have now become literature on Nutrition all the world over, that the research work carried on there during these 34 years, has been vitiated or at least limited by the handicaps that have now been put forth in justification of the proposed transfer to a place which can by no stretch of imagination or argument be considered as ideal as or better situated than Madras City or its environs. Here in Madras City we have numerous nutritional problems awaiting solution by suitable and immediate expert investigation and also adequate facilities in the shape of (1) up-to-date, efficiently equipped modern hospitals, (2) first rate research laboratories like the King Institue and the B.C.G. Laboratory at Guindy, wherefrom equipment or other minor incidental requirements can always be obtained on loan at a moment's notice without any particular piece of research having to wait even for a day, in order to obtain the requisite aid from distant places, and above all (3) the added advantage as a local contemporary pointed out the other day of "being able to help a very large and partly famished Indian State to improve its diet and to fight its deficiency diseases", for be it noted that one can find in this State, and even in this City of Madras cases of almost every conceivable type of nutritional and dietetic deficiency

and the research workers will be always have more and varied material than they can comfortably handle.

The question of accommodation has in recent years, been made to loom large in the eyes of the Government and of the lay public as this aspect is constantly being urged by the modern research workers and associations as a condition precedent for proper medical education and for all scientific research! It was only the other day while addressing an audience of educated scientific men that our esteemed Chief Minister Sri C. RAJAGOPALACHARIAR in his deep and rich wisdom and experience of men and matters, said that brilliant researches of abiding value that have resulted in outstanding benefits to mankind, have been carried out quite unostentatiously with minimum equipment in tiny little rooms and small buildings of a modest and unpretentious nature. Unfortunately there has lately been too much emphasis laid on brick and mortar and comparatively less on the solid work to be done within the structure erected with such material. As Dr. U. KRISHNA RAU very rightly pointed out in his Presidential Address at the Sixth South Indian Provincial Medical Conference at Kozhikode on 5th October 1951 "it is time that we turn to the old ways of education in congenial surroundings at very little cost of brick and mortar. Proper teaching and clinical instruction can surely be imparted without a huge outlay on buildings at present." He was really voicing the opinion of thoughtful men and real patriots when he said this. For, in the present state of finance of an infant democratic sovereign republic (impoverished by years of foreign rule) it will not be justifiable to embark on the construction of huge and costly buildings, without which substantial research work will still be possible by really keen scientists. Undue importance is, we are afraid being given at every turn to buildings and to personal fads, prejudices and prepossessions in the matter of medical education and medical research. The sooner it is realised that buildings and complete sets of costly equipments are not absolutely necessary for efficient training or research and that it is perfectly possible to do magnificent work with what we have already got by way of buildings and equipment, the better will it be for the steady progress of our country in every sphere of life. Absolutely essential equipment should of course be obtained whenever needed for efficient work. We earnestly hope and trust that the proposal to shift the Nutrition Reseach Laboratories from Coonoor to Hyderabad will therefore, be dropped and if they must be shifted from the salubrious hill climate once considered best suited for research, down to the plains they may more profitably be shifted to the Madras City which is ideally situated in every way and which abounds in all facilities for the type of research that these laboratories are called upon to undertake. The recommendations of the Bhore Committee envisaged the opening of several branch centres all over India; for all researches they would carry out routine and research investigations relating to the

particular and special problems of each centre or groups of centres. These branch centres will of course receive help and guidance from the Central Institution which will function on an All India basis. Madras has led and led always with great distinction and signal success in so many directions in the past and may therefore be relied upon to do so in this field also, with her abundance of facilities and suitable material for nutritional research. Need we say that "Discretion is the better part of Valour?"

Gleanings From The Medical Press

MEDICINE AND THERAPEUTICS

Effect of large doses of aureomycin on human liver.—(*Arch. Int. Med.*, 88 : 3, pp. 271-284, Sep. 1951).

Aureomycin has been in extensive clinical use for over 3½ years now and has exhibited a minimum of toxic reactions, limited almost exculsively to gastrointestinal symptoms after oral medication and to thrombophlebitis after I.V. administration. Occasionally allergic reactions have been noticed. Lepper and five other coworkers working in the Department of Preventive Medicine of the Illinois University College of Medicine, Chicago (U.S.A.) administered aureomycin intravenously to a number of seriously ill patients. Because of the severity of their illnesses large doses were given intravenously, occasionally for a long period, and in many cases oral doses of aureomycin in addition. The majority of patients receiving I.V. therapy only did not develop any toxic reactions other than those noted above; but a few who were given, what the authors now consider to be excessive doses of aureomycin intravenously showed clinical and laboratory evidence of injury to the liver. The authors have presented in this paper clinical data on these patients and where available the results of the pathological examinations. During 2½ years they treated 61 adults and 42 children intravenously. Aureomycin was administered orally concurrently to 14 of these patients, seven of whom showed signs of liver dysfunction. The author's conclusions are summarised as under :—

103 patients were given large doses of aureomycin in the treatment of serious infections ; 14 of them received both intravenous and oral medication. Seven of these showed evidence of liver dysfunction. Enlargement of the liver developed in all the seven cases. Four had clinical jaundice, and hyperbilirubinæmia was present in an additional patient. Five died and necropsy examinations on the five and a biopsy specimen from one of these seven, showed definite pathologic changes in the liver cells *e.g.*, marked vacuolation and fragmentation of cytoplasm, necrosis and fatty metamorphosis (in the needle biopsy specimen).

Two subjects were given aureomycin intravenously and were studied by means of serial liver-functions tests. These showed diminution of liver function. The pathological changes in the liver appeared to be reversible when the condition was recognised early and aureomycin therapy was promptly discontinued.

Intravenous doses of aureomycin less than 2 gm. a day in adults were not however, accompanied with evidence of liver dysfunction or injury, nor have these conditions been observed in the 1,300 patients and more, to whom the authors have administered aureomycin orally.

The doses of aureomycin which caused these changes in the liver are now considered to be excessive. *It is recommended* until further evidence is accumulated, that *aureomycin should not be given intravenously in large doses*. It is

suggested that when aureomycin is administered orally in addition, no more than 1 gm. of the drug per day should be given by the intravenous route. When adjuvant oral therapy is not employed, *2 gm. of aureomycin intravenously a day would be the maximum dose. For children a maximum intravenous dose of 40 mg. per kg. of body weight is recommended.*

Effect of ACTH and cortisone on the blood in various disorders in man.—(*Arch. Int. Med.*, 88 : 3, 310-336 Sept. 1951).

Since the discovery that ACTH and cortisone exert beneficial effects on a wide variety of disease processes, which had not been considered previously to be primarily hormonal in nature, Wintrobe and his coworkers of the Utah University College of Medicine treated 40 patients suffering from a variety of diseases associated with anæmia by administration of these hormones. They report favourable results among which were improvement and a decrease in the degree of anæmia. Their findings show striking improvement in the clinical condition, as well as in the hæmatological picture in five of 11 patients with acute leukemia, in three of 4 patients with acquired hæmolytic anæmia, in 2 of 4 patients with disseminated lupus erythematosus, in all three cases of rheumatoid arthritis and in one with idiopathic thrombocytopænic purpura. In addition one patient each with multiple myeloma, terminal lymphosarcoma, chronic lymphocytic leukæmia, and reticulum-cell sarcoma involving the bone marrow showed a diminution in the number of abnormal cells in the marrow and regeneration of erythroid cells, although there was no clinical improvement. One patient with Hodgkin's disease showed symptomatic improvement and reduction in fever but no hæmatological change. Slight reticulocytosis was noted in 2 cases of pernicious anæmia in relapse and there was a decrease of purpura in 2 patients with aplastic anæmia. Therapy with these hormones may be of considerable value in the management of patients with acquired hæmolytic anæmia and idiopathic thrombocytopænic purpura.

Daraprim—a new antimalarial.—(*B.M.J.*, April 5th 1952).

Ian A. Mc Gregor and Dean A. Smith writing of their experiences on the effect of Daraprim, the new anti-malarial in *British Medical Journal* of April 5th '52 state that in a series of cases of clinical malaria with high parasitæmia and pyrexia, particularly with cases of plasmodium falciparum and quartan malaria the drug was found to be remarkably effective. They treated all these cases with Daraprim in a single oral dose of ·25 or ·5 milligrams per kilogram of body weight. Daraprim is 2:4-diamino-5-p-chlorophynyl-6-ehyl-pyrimidine (compound number 50-63) and a drug with few toxic effects. The drug is powerful schizonticide. It exerts a powerful destructive action on dividing schizonts and a less powerful action on the trophozoites. The blood became sterile of parasites within 96 hours in all cases. The drug is tasteless and is suitable in the treatment of malaria in infants and children. Its action seems to be parallel to that of paludrine.

Daraprim when available in India certainly seems to promise a new era in the treatment of malaria.

Effect of streptomycin on vestibular function.—(*Br. Med. Jour.*, 17-3-1951, pp. 554-559, also *Abst. World. Med.*, Aug. 1951).

Bignall, Crofton and Thomas studied the effect of streptomycin on vestibular function in 76 patients who were treated at the Brompton Hospital ; 33 received 2g. daily 32 received 1 g. daily and 11 patients received PAS in addition to 1 g. daily of streptomycin. Observations on vestibular function included a record of symptoms of giddiness, and nystagmus, eosinophil accounts and also caloric and galvanic tests were performed at 44 C. 30 C. and 21 C.,; galvanic tests were peformed by placing one electrode over the mastoid region, when on gradually increasing the current to 4 to 8 MA, the sensitivity of the nervous structures was indicated by a lateral inclination of the head towards the anode or away from the cathode. Patients receiving 2 g. daily of streptomycin complained of

giddiness more than those getting 1 g. only every day, the incidence in the latter group being only 16%. Nystagmus on lateral deviation of the eyes was noted in 63% of those who received 2 g. per day but only in 16% of those who had 1 g. daily. The caloric tests (response to stimulation of hot water into the ear) could be correlated to the symptoms of giddiness and nystagmus. The galvanic tests were however, positive in 13 patients who did not respond to the caloric tests. There was no relationship between the development of eosinophilia and the onset of giddiness. Antihistamine drugs were given as prophylactic and the incidence of giddiness appeared then to be somewhat reduced. The antihistamine drugs may possibly be of some value in protecting against vestibular damage by streptomycin.

Amithiozone (Thiosemicarbazone T.B.I.) in Leprosy: (*Int. J. Leprosy*, 18 : pp. 451-456).

Vegas *et al* report on their trials with this drug in the treatment of leprosy at the Cabo Blanco Leprosarium in Venezuela. So far 42 patients have been treated for periods of 3 to 6 months. The initial results indicate considerable therapeutic activity. There was notable clinical regression of leprous lesions; no manifestations of intolerance were observed and no blood changes or disturbances of the liver or other viscera occurred. The authors believe that this drug is of great benefit in the treatment of leprosy.

Intracavernous administration and oral therapy of amithiozone.—(Malluche, H., *Act. Med Scand.* Stockholm: *Abst. J.A.M.A.*, 26-5-'51).

One hundred patients with tuberculous pulmonary cavities were treated by Malluche with suction drainage, daily intracavitary instillation of 0·1 g. of amithiozone (thiosemicarbozone T.B.I.) in a 20% suspension of glycerine and also 0·05 to 0·1 g. of the drug by mouth. To prevent infection of the drainage channel 10 to 20 thousand units of penicillin were injected into the cavity every other day. If there were febrile reactions during this treatment, streptomycin was given for a week or two, 0·25g. into the cavity and ¼ to ¾ g. intramuscularly. Prolonged streptomycin treatment was avoided. Suction drainage was done during the day and intracavitary instillation at night. Tubercle bacilli were eradicated in about 3 weeks and no resistance to amithiozone was developed. It was found possible to close permanently even comparatively large cavities. Patients with serious exudative tuberculous processes or with multiple cavities can also be treated with intracavernous administration of Contuben T.B.I. Before the trocar and catheter are introduced for suction drainage it will be necessary to ascertain that the pleural layers adhere to one another. If there is no adherence, it can be induced by the injection of blood, 60% dextrose or kaolin. In patients with very large cavities supplementary collapse therapy may be required.

SURGERY

Treatment of burns of the eyes.—(Derrick Vail, M.D., Chicago Illinois).

The eyes are well protected by the lids against burns whether caused by chemicals, radiations, friction, heat or cold. Thus it happens that in the usual accident or exposure to these injurious things the eyelids bear the brunt of the attack. Only rarely is the eyeball primarily attacked and this occurs when the harmful agent hits the anterior part of the eye, chiefly the cornea, with such speed that the winking reflex cannot take place fast enough to prevent it. Even in this event the lids share more or less in the resultant damage.

For the sake of clarity therefore, it seems best to divide the subject of burns of the eyes and their treatment into two parts, namely, lids and eyeball.

Lids:—The lids have so rich a blood supply and are so well supported by muscle and cartilage that extensive

burns which in other parts of the body would quickly result in necrosis and sloughing of tissue, unless very extensive and penetrating, rarely do so in the eyelids. World War II showed many examples of this and directives were issued to the medical officers urging them not to excise tissue of the lids even if it appeared to be black with necrosis or suggestive of gangrene. The treatment is that used in skin and muscle burns elsewhere, *e.g.*, local and bland solutions or antibiotic ointments, gauze or linen coverings and general treatment directed toward preventing infection, relieving pain and supportive to the patient's health.

When, however, injury to the tissues of the lids is too extensive, and above all when it appears that the eyeball has not been damaged or only slightly so, immediate efforts to protect the eye are necessary. This is done usually by skin flaps or, if no skin is available, tenotomy of all the extraocular muscles and reversal of the eye as far as it will go. A cornea, even a healthy one, if exposed to air and if unprotected will soon break down, ulcerate and perforate with total extrusion of the intraocular contents.

If the lids and the eyeball are destroyed, treatment consists of debridement and later plastic repair.

Eye:—The treatment of burns of the eyeball varies to some extent with the nature of the cause. Thermic or radiation burns require little beyond rest to the eye by binocular bandaging and rest to the iris by atropinization. However, should the burn be severe enough to injure the cornea hopelessly, the eye or at least vision is sure to be lost for the cornea does not regenerate. The conjunctiva and cornea are particularly vulnerable, the sclera quite resistant to all forms of burns.

Chemical burns of the eye present an entirely different problem, for not only is there an immediate injury particularly to the cornea and conjunctiva, but also and constantly a slower and more deadly injury to the inner structures as the chemical penetrates more and more deeply. It is not unusual to see an eye splashed by acid or alkali in its early stage appearing to be scarcely injured. The cornea may be bright, the pupil active and the vision good, yet in a short space of time the cornea clouds and the intraocular tissues become affected.

I do not hold with those who say that treatment of eye burns depends upon the nature of the chemical, *i.e.*, whether it is acid or alkaline. Attempts to neutralize the chemical with weak solutions of alkalies or acids result in a loss of critical time and may lead to further insult to the tissues. The theory of neutralization works reasonably well in experimental animals, obviously best when the neutralization is immediate, but is not practical when applied to the frailty of human flesh and to the ignorant judgment of the victim.

What then are we to do? McLaughlin of Charleston, West Virgina, through great experience and rare judgment has developed a technique that is nearly foolproof and with extraordinary good results that have been verified by the experience of others. McLaughlin concluded from a study of 500 consecutive cases that the following treatment is best: (1) Immediate first aid should be given at the site of the accident. This consists of washing the injured eye thoroughly and at once with tap water, holding the lids open with the hands. No attempt at neutralization is permitted, nor is any effort made at that time to remove any foreign particles. The victim is then transported as quickly as possible to the physician in the plant dispensary or to the nearest hospital. (2) Here the eye is anæsthetized with pontocaine and carefully inspected. Gross particles are gently removed with moist cotton pledgets and the eye gently irrigated with a continuous flow of normal saline, no pressure being exerted upon the eye. This is continued for fifteen minutes, after which the eye is once more inspected and fluorescein solution is instilled. If the cornea stains, further anæsthesia with pontocaine is produced and another saline irrigation is done for fifteen minutes. The stain is applied once more and if unequivocal the patient is sent to the ophthalmologist. McLaughlin insists that specialized treatment be given by

the ophthalmologist within two hours after the injury, for further delay threatens recovery of vision. (3) The involved part of the corneal epithelium is removed by denudation using a minute cotton swab under direct observation with the corneal microscope. The eye is first anæsthetized with cocaine (4 per cent) which softens the epithelium. Denudation of the affected conjunctiva is carefully performed as well and the eye gently flushed with stainless solution of merthiolate; care is taken that no cellular debris remains. Antibiotic ointments and atropine solution are instilled and the eye covered with a firm eye pad. McLaughlin's published statistics show that of 500 cases 456 or 91·2 per cent healed in forty-eight hours with no loss of vision, thirty-seven or 7·4 per cent healed slowly but without loss of vision, and seven or 1·4 per cent healed with residual loss of vision. Not one case of subsequent conjunctival adhesions was met with by McLaughlin.

This technique has been widely followed by plant physicians with universally good results. Recently due chiefly to the efforts of Dr. Hedwig Kuhn of Hammond, Indiana, who has had great experience in the handling of cases of chemical burns of the eye, the use of a patented remedy known as hydrosulphosol has been advocated. The use of this substance has not been readily or widely adopted as yet by other ophthalmologists, and more studies need to be done on the problem of its use which at the moment is controversial.—(*American Journal of Surgery*, May 1952).

An appraisal of the long-term results of surgical treatment of regional ileitis.—J. H. Garlock and associates (*Gastro-enterology*, 19:414, Nov. 1951) report a long-term follow-up of cases of regional ileitis operated on, and first reported in 1945. This series includes 57 cases in which ileocolostomy with exclusion was done; of these 10 have not been followed up, 36 were free from symptoms in 1945, and remain well; 6 had a recurrence before 1945; in 3 of these cases resection was done for the recurrence, and these patients are well at the time of this report; in 2 cases there was x-ray evidence of a recurrence in 1942, but these patients are free from symptoms in 1951; one patient still shows evidence of diffuse involvement of the small bowel, but is "reasonably comfortable." Five patients, free from recurrence in 1945, have since developed a recurrence; resection has been done in 2 of these patients and they are free from symptoms at the time of this report. In 1945, 45 cases of regional ileitis in which one-stage resection was done were reported; there were 6 post-operative deaths in this group. Of the 39 surviving patients, 17 have been lost to follow-up, including 3 who showed recurrences in 1945; 2 have died of intestinal obstruction (recurrence not proven); 3 showed recurrence in 1945, and of these 2 have died, and one had a second resection and now shows a second recurrence. Seventeen patients in this group remain well. In 1945, 16 cases were reported in which a two-stage resection was done; 2 of these patients died postoperatively; of the 14 patients surviving operation one has been lost to follow-up, 4 had a recurrence before the 1945 report; in one resection was done and the patient is now well; another patient is now well with negative x-ray findings without operation; in one a total colectomy has been done; one died after operation for the recurrence; 2 patients reported well in 1945 have since developed a recurrence, in one of whom resection has recently been done; 7 patients in this group who were well in 1945, are now well. In 1945, 19 cases of ileocolitis in which operation was done were reported, with 3 post-operative deaths; of the remaining 16 patients, 6 have been lost to follow-up; in 3 a recurrence was reported in 1945; one of these patients is now well after resection of the recurrence, and another after ileostomy; one patient has died; 4 patients reported well in 1945 have since died after a second operation, one with intestinal obstruction; 3 patients in this group, reported well in 1945, are still well. The authors note the fact that some of the late recurrences, as stated above, have shown spontaneous healing; it is

difficult to explain this result, unless it is possible that the disease has "burnt itself out." Recently extensive resection of the small bowel for jejuno-ileitis have been done in patients not reported in this series with good results, patients gaining weight and showing "minimal" disturbance of bowel function, indicating that such extensive operations do not necessarily interfere with normal nutrition.—(*Medical Times*, May 1952).

Major surgery in Hodgkin's disease.—R. D. Williams and associates (*Surgery, Gynecology and Obstetrics*, 93:636, Nov. 1951) report 31 cases of Hodgkin's disease in which one or more major surgical operations were done. In one of these cases, the operation was done for removal of localized Hodgkin's disease in the cervical lymph nodes (a radical neck dissection); this patient is living and well eight and a half years after operation without signs of recurrence. In 11 cases splenectomy was done because of hypersplenism with resulting thrombocytopenia, neutropenia or pancytopenia. In all but 2 of these patients the blood picture was greatly improved or returned to normal. There were no postoperative complications, and life was definitely prolonged. In 4 cases operation was done to relieve compression symptoms; in 3 of these cases laminectomy was done because of epidural lesions of the spinal cord; in the case in which the operation was done early, there was immediate improvement in neurological symptoms; when operation was done after symptoms had been present longer, improvement was delayed and less marked, but there was no further progression of symptoms. Operation may also be done to remove large masses of Hodgkin's tissue that are causing pain; this should be followed by x-ray therapy, and may result in symptomatic improvement. When Hodgkin's disease cannot be definitely diagnosed by biopsy of peripheral lymph nodes, exploratory thoracotomy or laparotomy may be done. Thoracotomy was done in 5 of the authors' cases, with removal of mediastinal masses in 2 cases; there was one death from cardiac arrest during operation. Laparotomy was done in 6 cases, in 4 of which there was a palpable adominal mass; 2 of these patients; with liver involvement, died; the other 4 made a good postoperative recovery. In 7 cases operation was done for surgical conditions not related to Hodgkin's disease, such as acute appendicitis; one of these patients died following her third major operation; the others had no postoperative complications. In general patients with Hodgkin's disease in whom the disease is not generalized or "terminal" tolerate surgical procedures well, and even major surgical procedures do not "accelerate the course" of the disease. —(*Medical Times*, May 1952).

Parotid gland tumors and their surgical management.—R. W. McNealy and J. W. McAllister (*Jonrnal of the Michigan State Medical Society*, 50:398, April 1951) have found that prompt operation and excision (not enucleation) of the tumor are important factors in the treatment of tumors of the parotid gland. Rœntgen-ray therapy is not indicated as parotid tumors are definitely radio-resistant. Operation should not be delayed until a small tumor grows larger, as this increases the danger of recurrence; an apparently small tumor may have a larger tumor underlying it. In operations on parotid gland tumor, the authors prefer to use general anæsthesia. The incision employed extends downward from the zygomatic arch, close to the pinna of the ear, to below and just behind the angle of the mandible, then turns "abruptly" to below the body of the mandible in one of the skin folds of the neck. The lateral flap is undermined to expose the posterior and inferior margins of the gland. The medial flap is then dissected free. If the tumor is small and situated in the superficial lobe of the gland—which is the site of origin of most parotid tumors, a superficial lobectomy will result in complete excision of the tumor. If a total lobectomy or a total removal of the parotid gland is necessary, ligation of the external carotid

artery should be done. Permanent facial palsy will occur only if the main trunk of the seventh cranial nerve is cut proximal to the parotid isthmus; this can best be avoided by initial excision of the superficial lobe; if the course of the nerve is then not clear, resection of the mastoid process may be done. Some paresis, usually transitory, may result from division of some of the lesser branches of the nerve. As a rule, serious injury to the facial nerve can be avoided by careful technique, but preservation of the facial nerve is considered by the authors to be "secondary in importance" to complete excision of the tumor.—(*Medical Times*, May 1952).

OBSTETRICS AND GYNÆCOLOGY

The advantages to mother and infant of amphetamine in obstetrical analgesia.-Stuart Abel (*American Journal of Obstetrics and Gynaecology*, 62 : 15, July 1951) reports a study of the effectof the use of amphetamine with morphine for obstetric analgesia. Preliminary experiments on dogs,showed that amphetamine counteracted the depressing effect of morphine on newborn puppies. In the present study, a control group of 350 cases given no analgesic drug was used; in 38 cases 1/6 grain of morphine was given as an analgesic, in 112 cases, 1/6 grain of morphine followed by 5 mg. of d-amphetamine or 10 mg. of dl-amphetamine was employed; and in 114 cases Demerol (100 mg.) and scopolamine (1/50 grain) were given. The effect of any inhalation anesthesia employed before delivery was also considered. The interval between the delivery of the chin and the occurrence of the first respiration of the infant was determined and used as a criterion of the effect of the analgesic on the infant. In the control group given no analgesic drug, it was found that the chin-respiration time was diminished by 3·26 seconds by each minute of cyclopropane anæsthesia before delivery. Using this "anaesthesia correction factor," the chin-respiration time in the control group was found to average 31·9 seconds. Both morphine alone and Demerol-scopolamine analgesia were found to delay respiration to a statistically significant degree as compared with the control group. In the group in which amphetamine was given immediately after morphine, there was significant delay in respiration. These findings indicate that with the addition of amphetamine, morphine may be used for analgesia in labour with "minimal hazard to the newborn."—(*Medical Times*, April 1952).

The preclinical recognition of toxæmia of pregnancy.—H. M. Brill and associates (*American Journal of Obstetrics and Gynaecology*, 6 : 614, Sept. 1951) report the use of the Kranso-Ivy flicker photometer to determine the flicker fusion threshold with the nitroglycerine test as a means of detecting vascular spasm in pregnant patients. Three successive tests are made to determine the flicker fusion threshold for each patient. A tablet of nitroglycerine (1/100 grain) is then given sublingually and after two minutes three tests of the flicker fusion threshold are made at two-minute intervals; if there is no change in the threshold readings, another nitroglycerine tablet is given and three tests are repeated. In normal persons the nitroglycerine causes dilatation of the arterioles of the retina and congestion, with resulting lowering of the flicker fusion threshold; this is designated as the normal, or negative test. In persons with vasospasm, the dilatation of the retinal blood vessels by the nitroglycerine improves the blood flow and the oxygenation of the retina, with a resulting rise in the flicker fusion threshold; this is designated the abnormal, or positive test. The tests, as described, were made on 199 pregnant patients, 161 of whom gave normal (or negative) responses and 38 gave abnormal (positive) responses Of the 38 patients with positive tests, 23 gave no history of previous toxæmia of pregnancy, and showed no evidence of cardio-vascular-renal disease; 10 of these patients subsequently developed sym-

ptoms of toxæmia of pregnancy; the remaining 13 patients have not yet completed their pregnancy. Eight patients who showed clinical signs of toxæmia of pregnancy at the time of the test gave a positive response; the other patients in the group with positive tests showed evidence of cardiovascular renal disease. None of the patients who showed normal responses to the test has developed toxæmia at the time of this report. Tests were made after delivery on 14 patients who had toxæmia of pregnancy or cardiovascular-renal disease; in 6 of these patients the response to the test had "reverted" to normal. On the basis of these findings, the authors conclude that the test can be used to predict the development of toxæmia of pregnancy, before there are evident clinical symptoms, and it may be possible to prevent the onset of toxæmia by "adequate prophylactic therapy." The test may also be of value as indicating the adequency of the therapy employed in the toxæmic patient.—(*Medical Times*, April 1952).

Pain and pain relief in essential dysmenorrhœa.—Franz Schuck (*American Journal of Obstetrics and Gynaecology*, 62: 559, Sept. 1951) reports a study of 640 University freshmen and 150 older students in regard to the occurrence of primary or essential dysmenorrhœa, and possible methods of treatment. In this study it was found that psychoneurosis did not occur more frequently in the group of students with essential dysmenorrhœa than in those with normal menses. No physiological factor—either in general physical development or gynæcological status—was found that could be considered to be an etiological factor in essential dysmenorrhœa. Oestrogen therapy was found to be more effective than any other form of treatment employed in cases of essential dysmenorrhœa. Oestrogen was given in the form of Eystinyl, one tablet (0·05 mg.) daily, for ten or twelve days, beginning the day after a menstrual period. If the pain was relieved at the next menstrual period, treatment was repeated for three to five courses, often in diminishing doses. If the treatment was not effective at first, repeated treatments were rarely effective. In 300 patients treated with œstrogen, pain was relieved in 60 per cent, but there was no beneficial effect in 40 per cent. Progesterone therapy had no effect in a group of 60 patients. In 80 cases Padutin, an insulin-free pancreatic hormone, with a marked vasodilator effect was employed; this resulted in relief of pain in some cases, and partial relief in others; but in over 50 per cent of the cases the treatment had no effect on the dysmenorrhœa. Padutin was used in this series because it has no harmful side-effects. From their study of this series, the authors express the opinion that in many young individuals, essential dysmenorrhœa is due to a deficiency of some factor either "contained in the œstrogenic hormone or activated by it," but this factor so far has not been identified; further studies are being made in an attempt to identify it.—(*Medical Times*, April 1952).

EYE, EAR, NOSE AND THROAT

Treatment of itching ears—A clinical note.—(Irving Wilson Voorhees, M.S., M.D., New York).

While itching ears suggest the presence of *otomycosis*, the latter is too restricted a term because there are other causes for this exceedingly annoying condition than fungi. It is true, however, that fungi are found in many cases of itching ears encountered in daily practice. If one will obtain a "specimen" from the auditory canal, put it in a drop of water on a slide and examine it under the low power microscope, he will not infrequently see animalcules which may not be readily named unless one is skilled in identifying fungi.

A chronic discharging middle ear can readily infect the skin of the canal. Usually, one may expect an abscess sooner or later, or an external otitis. When this has cleared and the lumen of the canal returns to normal, itching may persist. As an aside, I should like to

make an observation or two on canal infections caused by microorganisms. As everyone knows, nature rebels against the enemy, infiltration takes place and the canal "swells shut." Very often itching has so disturbed the patient that, in order to obtain relief, he has "scratched" the meatus with a hairpin or other object, thus actually rubbing the tiny organisms into the epidermis. One may have as much pain from this "boil in the canal" as is experienced from acute mastoiditis. The classical *locus resistentiae gives* pain on palpating the area just in front of the tragus, but any movement of the frame-work will be painful. Therefore, the patient cannot lie on the infected side, or if he goes to sleep and turns in the night, he is rudely awakened.

When I began the practice of otology, we had a special "bistoury," a curved sort of Turkish weapon, which, when plunged into the swollen area, would cut its way out and open a wound for drainage. Quite often we would incise in the wrong place, obtain no pus, and thus increase the patient's discomfort. Moreover, on the day following, a new abscess would form directly opposite the first one, prolonging the course of the original condition. There was also danger to the chondrium from the stab infection into the deeper tissues. The situation is different today. Few if any otologists do much cutting of the ear canal. Common sense dictates the separation of the walls of the canal by antiseptic-soaked gauze strips. For this purpose I employ a solution known as "campho-phenique." The gauze strips must be very narrow. It may be difficult to insert them, but with patience they can be properly placed despite objections of the patient. The phenol element produces an anæsthetic effect and also in exfoliation of the external skin layer thus permitting penetration of the disinfecting agent. Treatment is carried out daily. There is no objection to the local use of heat which usually is pain-relieving. Ultraviolet light from a mercury quartz lamp is sometimes helpful. When the swelling begins to subside, the canal opens so that the interior may be adequately examined. Mastoiditis should be excluded by x-ray studies. Palpation of the classical areas behind the ear may be misleading.

Because any phenol preparation used frequently on a skin surface will produce maceration, the campho-phenique solution should be replaced by an antiseptic like hexylresorcinol. This preparation serves effectively for moistening the narrow gauze strips which are inserted in the ear canal. This medication produces no damage to the skin and can be used daily if necessary.

Most itching ear canals present dryness of the skin. The ceruminous glands do not function and, therefore, there is no evidence of cerumen. The invading infection may have a destructive effect on the cutaneous glands. If the dryness produces no symptoms, treatment is unnecessary. But when scaling and itching persist, the skin areas should be lubricated from time to time.

Itching may be confined to one ear canal only, or both ears may be involved. The degree of itching is seldom the same on both sides. If the tympanum has been invaded, the process is sometimes known as *myringomycosis*.

By long experience I have learned that one of the most effective topical agents in itching ears is tincture of iodine. It may be painted on the skin of the canals without application to the drum. In most cases half strength U.S.P tincture is adequate. After it is applied and allowed to dry, the stained surface is wiped off with a cotton applicator wet with alcohol. Then a wick of vaseline gauze is inserted in the canal. On repeated visits, the canals are examined and only dry wicks inserted. This treatment, simple as it appears, has been found beneficial in a number of cases even after other methods, including x-ray therapy, have failed to produce a satisfactory result. While probably not curative, topical application of tincture of iodine, as previously described, may certainly be regarded as an effective palliative.

Summary and Conclusions

All itching ears are not produced by fungus infections, and, therefore, other likely causes such as eczema should be sought for so that they may be corrected.

Furunculosis of the ear canals usually responds to medicated wicks to keep the walls of the canal separated. Heat and ultraviolet light are helpful therapeutic adjuvants.

One of the most effective topical agents to control itching of the ear canals is tincture of iodine, but it must be used cautiously so as not to injure the drum membrane. The method of application has been described.—(*The Eye, Ear, Nose and Throat Monthly*, May 1952).

Sinusitis in children.—A sane and rational basis for nasal and systemic medication is an essential requirement in the treatment of adult nasal and sinus disease. It is doubly important for children who are especially subject to recurring attacks of upper respiratory infection. For many years sinus disease in children had been inadequately studied and even neglected by rhinologists, pædiatricians, and general practitioners, this despite the fact that sinusitis may be a complication of the acute exanthematous diseases, especially scarlet fever and measles, as well as of whooping cough, influenza and any acute respiratory tract infection. Moreover, one of the more important reasons for disregarding sinusitis in infants and children has been the failure to realize that the maxillary sinuses and the ethmoid cells are present at birth and are structurally large enough to be of clinical importance. Many persistent or recurring colds are due to infection of these sinuses.

Predisposing factors for the establishment of sinusitis in children are undernourishment, poor hygienic surroundings, inadequate diet, constitutional defects, and anything that causes mechanical obstruction to normal aeration and ventilation. In children the infection strikes at virgin territory, absorption is more rapid, and, therefore, the constitutional symptoms are frequently more pronounced than in adults. Sinus ostia in children are relatively large and permit access of infected secretion from the nasal passages. The general sinus symptoms may be any of those experienced by adult patients; children, however, evince lassitude, pallor, anorexia and secondary anæmia more promptly and more frequently than do adults with comparable infections.

Because acute rhinitis in infancy tends to produce complications, it demands adequate attention. In infants having considerable nasal drainage, a soft rubber ear syringe may be used to clear the nasal passages. The bulb of the syringe is compressed before introduction into the nostril and then allowed to expand, a procedure that withdraws the offending nasal discharge. When the opposite nostril is allowed to remain open, there is no danger from excessive negative pressure. The mother is always cautioned to avoid exerting positive pressure. When the infant cannot take breast or bottle because of breathing difficulty due to suppurative nasal blockage, the use of the syringe immediately before feeding-time often enables the child to take nourishment. A bland mild nasal vasoconstrictor following suction is quite helpful when applied for several minutes on short cotton-tipped applicators.

As in the case of adults, the medical treatment of sinus disease in children proceeds mainly along the general principles favourable to the restoration and maintenance of normal nasal and sinus physiology. From a practical point of view, both the lateral head-low posture and the position for displacement therapy offer the advantage of being painless. With the latter, the required equipment consists of a table a source, of suction, an irrigating physiologic saline solution, rubber tubing, and a nasal suction tip.

Before irrigation is begun, the child is seated on the edge of the table and told about the ensuing treatment in a friendly, informal way. He is reassured as to its painlessness and rapidity. If the suction tip has never before been used on him, it is now demonstrated first against his skin, then in his nostril. Profuse nasal discharge, clogged nasal passages and distressing coughs of long standing are frequently relieved by several treatments. The resulting

comfort and restful nights are highly appreciated. In the event the maxillary sinus is involved and the aforementioned procedures fail, irrigation of the cavity *via* naso-antral puncture is a useful procedure in the severer forms of sinusitis in children. In some instances it is possible to irrigate the maxillary sinus *via* the natural opening.

As to the problem of the selection of therapeutic agents in sinusitis in children, there can be no set rule that is applicable to all cases. Much depends on the physician's ability to appreciate accurately the question of sinusitis, the environment, the background and social status of the child, and to apply his therapeutics accordingly. Therapeutic nihilism is just as bad as overtreatment. A happy medium consistent with an understanding of the reparative forces in the nasal cavity and sinuses is the ideal all physicians should strive to attain.

Ventilation of these structures is effected by the rational use of a mild 0·5 per cent ephedrine sulfate solution in physiologic saline: Ephedrine was the first of the nasal vasoconstrictors to be introduced and is still the most widely used. The vasoconstrictor action of the drug begins shortly after local application and lasts 2 to 4 hours. The success of ephedrine led to the synthesis of other nasal vasoconstrictor, some more potent, others less potent than ephedrine. Among these are such preparations as Neo-synephrine hydrochloride in 0·25 or 0·5 per cent solution; Alconefrin in 0·25 or 0·5 per cent solution; Clopane hydrochloride in 0·5% solution. Aramine in 0·25 or 0·5% solution; Tuamine sulfate in 1 per cent solution; Privine hydrochloride in 0·5% solution; and Paredrine hydrobromide in physiologic saline to make a 0·25 to 0·5% solution. When employed with due regard for nasal physiology, these preparations do no harm.

Such complications of sinusitis in infancy and children as orbital cellulitis and abscess yield to medical treatment, hot moist packs, and the use of antibiotics and sulphonamides in adequate dosage. Fortunately, surgical intervention is now required only in exceptional cases.—(*The Eye, Ear, Nose and Throat Monthly*, May '52).

Anticoagulant therapy in occlusive vascular disease of the retina. —(*A.M.A. Arch. Ophthalmol.*, 46, 601–617, Dec. 1951).

Duff *et al* of the Department of Ophthalmology and Internal Medicine in the University of Michigan Medical School carried out anticoagulant therapy on 47 patients with occlusive vascular disease of the retina during the period May 1941 to April 1951. Thirty-six were inpatients and 11 were treated entirely as outpatients. Four received only heparin; 27 received heparin and dicumarol; and the rest received only dicumarol.

Heparin was given I. V. by intermittent injections or by continuous infusions. When used along with dicumarol, heparin was continued till the decumarol brought down the prothrombin concentration to the desired range—in about 3 days. Upon the establishment of the maintenance dose of dicumarol, patients were discharged, to be followed at intervals of 7 to 10 days. 12 of the 26 patients with thrombosis of the central retinal vein improved greatly; 8 remained unchanged; and 6 grew worse. Of 14 eyes with diabetic retinitis, 7 showed improvement in visual acuity. Dicumarol induced bleeding on 13 of the 47 patients. In 7 of these, dicumarol therapy had to be stopped owing to the severity of the hæmorrhage.

The prognosis for adequate visual acuity following untreated thrombosis of a tributary or central retinal vein is not encouraging. Only 15 of 79 untreated patients with complete occlusion of a central retinal vein showed improvement. The prognosis is less grave for untreated incomplete thrombosis of a central retinal vein.

The collected experience with anticoagulation therapy after thrombosis of a tributary or central retinal vein indicates that in nearly 60 per cent, the prognosis for visual improvement is favourably influenced. Further, the frequency of secondary glaucoma seems to be lowered to an appreciably notice-

able extent. Under this treatment the visual acuity in nearly 30 per cent of cases will be either unaffected or get worse. A short term of intensive heparin therapy produces results as good as prolonged dicumarol therapy. The incidence of hæmorrhage in the latter is moreover appreciably large. *Heparin is therefore, recommended for general use.* Institution of heparin treatment should be very prompt after thrombosis or occlusion of retinal artery if the results should be favourable.

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Compression of optic nerves.—(*Br. Jour. Ophthalmol.*, 34, 265).—A hitherto uuknown form of optic nerve compression has been recently recorded by Falconer and Pierard, who report on 2 cases on which an optic nerve was compressed and indented by a spike of bone projecting into the optic canal. Benefit was obtained in each case by decompression of the optic nerve. The question of surgical intervention in one of these two cases became very urgent owing to the fact that one eye had already been blinded by injury in childhood and the visual acuity of the other had consequently been lowered from 6/9 to less than 6/60 during the 2 years that preceded the operation. The particularly interesting feature in this case was that the maximum field impairment affected the upper temporal quadrant which also corresponded with the location of the bony spike. X rays showed that this bony encroachment was jutting into the lower and inner part of the optic canal. Decompression of the nerve was effected by removal of the upper lateral aspects of the canal wall, and the visual acuity three weeks later was 6/12. Further improvement occurred gradually and the patient was later able to read some letters on the 6/4 line of the test type.

In another case Falconer successfully performed frontal craniotomy and removed the bony spike from the optic canal. Here again the visual field loss was precisely related to the position of the compressive osteophyte. Both patients were middle aged women suffering from Morgagni's syndrome which is characterized by obesity, hirsuties, and hyperostosis frontalis.

NEWS AND NOTES

The Society for the Study of Industrial Medicine, India, Madras State Branch

A preliminary meeting of the members, those whose application for membership was pending with the Council for election, and those eligible for membership was held at Simpson's Welfare Centre on Friday the 23rd May at 5-30 p.m.

Over 100 invitation-cum-information circulars as below was sent out to many likely members :

CONVENOR—Dr. C. K. Ramachandar, *Medical Officer, Parry & Co., Ranipet writes :—*

A meeting of the members of the Society in Madras State and those who are eligible for membership will be held at the Simpson's Welfare Centre, Cooum River Road, Mount Road, Madras on Friday the 23rd May at 5-30 p.m. to discuss the formation of the Madras State Branch of the Association.

I would be happy if you will please make it convenient to attend the meeting and bring along with you any friends of yours who would be interested.

We are hoping to arrange the inaugural function of the Branch on Friday the 6th June at the same place. Hon'ble Dr. U. Krishna Rao, Minister for Industries. Hon. Mr. A. B. Shetty, Minister for Public Health and Mr. C. G. Reddy, Chief Inspector of Factories have kindly consented to participate in the function.

If there is any other information you would like to have, please feel free to write to me.

Looking forward to the pleasure of meeting you.

* * *

The Society was founded in Jamshedpur on 9th July 1948.

The aims of the Society are : 1. Stimulation of enquiry and causes, treatment and prevention of industrial diseases.

2. Guidance of industry with regard to problems of industrial medicine and hygiene on modern scientific principles.

3. To secure effective and complete organization of the medical officers in Industry.

Membership:—All registered Medical Practitioners associated with Industry and interested in the scientific pursuit relating to industrial medicine and hygiene.

Associate membership.—All those who are not eligible for membership but are associated with industry and interested in the aims of the Society (particularly Labour Officers). These will have the right to participate in the scientific work of the Society and attend the Scientific and social meetings. They shall not however attend the business meetings and shall not hold office or vote.

Activities of Madras State Branch:—1. Periodical scientific meetings and discussions.

2. Formation of a Library of books of interest to members.

3. Visits to Factories and other industrial establishments. As there are many members who are not in Madras City, meetings will also be arranged at different industrial centres in the State.

Subscription:—Members Rs. 8 per annum—Associate members Rs. 6 per annum. Madras Branch Subscription—common to all Re. 1 per annum.

This includes the subscription to the Quarterly Journal of the Society.

The following attended :

1. V. N. C. Rao, M.B., B.S. (Madras), Toxtile Industry, Medical Officer, B. & C., Perambur.

2. K. S. Jagannathan, M.B., B.S. (Madras). Light Engineering and Cellulose Industry, Medical Officer, Simpson's Welfare Centre.

3. S. Sankaran, L.I.M. (Madras), Power Station Basin Bridge, Medical Officer, M.E.F.

4. V. Krishna Rao, M.B., Ex-Research Officer, T'Nagar, Madras.

5. T. S. Subramanian, M.B., B.S., Madras Port Trust, Medical Officer, Port Trust Madras.

6. N. Srinivasan, D.O., D.O.M.S., General Engineering and Automobile Works, Simpson & Co., Madras.

7. J. A. Stevenage, L.M.P., Simpson's Medical Centre, 1, Cooum Road, Chintadripet, Madras.

8. N.A. Muqaddam, B.SC., M.B., B.S., Simpson's Medical Centre, Tee House, 6, J. H. Khan Street, Madras-14.

9. A. K Padmanabhan, B.A., Employee's State. Ins Corpn, 162, Royapettah High Road, Mylapore, Madras-4.

10. N. S. Bhat, B.A., B.L., Cotton Textiles. 3, Buckingham Gardens Madras-12.

11. V. John, B.A., B.L., Cotton Textiles, 4/14, Dr. Guruswamy Mudaliar Road, Kilpauk, Madras.

12. Mr. Chakrapani, M.B. B.S., Burmah Shell, 9, Venkatanarayana Road, T' Nagar.

13. C. K. Ramachandar, M.B., B.S., Ceramics, Fertilisers and Heavy Chemicals, C/o Parry & Co., Ltd., Ranipet.

Dr. V. N. C. Rao was requested to take the chair and conduct the meeting.

He thanked Dr. C. K. Ramachandar for the work he has done for the Society.

It was unanimously agreed.

(1) To have the inaugural function on 6-6-'52.

(2) To request Hon. Mr. A. B. Shetty, Minister for Public Health to preside and Hon Dr. U. Krishna Rao, Minister for Industries, Labour and Motor Transport to inaugurate the Branch.

(3) To thank Mr Anantaramakrishnan, Mg. Director, Amalgamations Ltd., for the kindness of offering the use of the Simpson's Welfare Centre for the inaugural function and also playing the host for that evening's tea.

(4) The convenor prepares the draft rules for the Branch and submit it to the General Body meeting on 6-6-'52.

(5) Circular letter on the following lines be sent to all members—those who have applied for membership and also likely members.

* * *

The inaugural function of the Branch was held on 6-6-'52 at Simpson's Welfare Centre, Mount Road, Madras.

Invitations (see p. 579 *supra*) were sent to over 200 persons, and about 100 persons attended. Messages wishing the function success were received from many.

Among those who attended were :

Col. Ramamurthi, Deputy D.M.S., Madras State. Dr. Vasudeva Rao, Retd. D.M.S.,

Madras State. Mr. Venkataraman, Director, Amalgamations Ltd. Mr. S. G. H. Davis, Director, M/s. Parry & Co. Ltd Dr. U. Mohan Rau, Surgeon, Govt. General Hospital, Madras. Mr. Selvapathi Chettiar, Trade Union Leader. Dr. C. T. Heme Chandar, Stanley Hospital, Madras. Dr. Sankaran, I.M.A., Madras Branch. Dr. K. Narayanamurti, I.M.A. Madras Branch. Dr. T. S. Tirumurti, President, I.M.A., India. Mr. C. G. Reddi, Chief Inspector of Factories. Mr Natesan, Regional Director, Employees' State Insurance Scheme.

The function took place according to programme.

* * *

Ministerial Addresses

"An industrial doctor had a big responsibility and had an important role to play in industrial health service", said Dr. U. Krishna Rau, Minister for Industries and Labour, inaugurating the Madras State Branch of the Society for the study of Industrial Medicine, India, last evening, at Simpson's Welfare Centre, Chintadripet. Mr. A. B. Shetty, Minister for Health, presided.

After tea, Dr. A. Daivasahayam, Principal Medical Officer of the Welfare Centre, welcomed the gathering.

Dr. C. K. Ramachandar explained the aims and objects of the Society. He said that industrial medicine tried to increase the productive efficiency of the common worker by so improving his living and working conditions as to enable him to acquire a more healthy physical, mental and moral outlook both regarding his work and his whole life. It was an improvement of environmental hygiene. They could learn methods in industrial medicine from foreign countries but details for our country could be worked out only by industrial physicians of the country. It was in July, 1948, that the doctors working in industry in Jamshedpur met and formed themselves into the Society. Encouragement and financial assistance for the Society should come not only from medicoes in industry but also from all the industrialists, big and small, and the State. When the State Insurance Scheme was extended to Madras the Society could be of very real assistance in arranging for the medical side of it. Its chief aims were the stimulation of enquiry and causes, treatment and prevention of industrial diseases, guidance of industry with regard to the problem of industrial medicine and hygiene on modern scientific principles and securing of effective and complete organisation of the medical officers in industry.

Dr. U. Krishna Rau's Speech

Dr. Krishna Rau, inaugurating the Branch, said that when he was President of the Indian Medical Association, they had tried to investigate the difficulties of industrial medical men. They had formulated certain resolutions and forwarded them to the concerned authorities. In such matters it took time to produce results and that was the reason why nothing had been done so far. He was sure that by the formation of the Society, they would be able to make real progress. With the increasing industrialisation of the country, the health of the workers assumed greater importance.

Industrial medicine would ultimately contribute to industrial prosperity and contentment. They should endeavour to keep this ideal of industrial medicine before them.

Facilities for Workers

"The Society", the Minister said, "should make a study of the causes which led to diseases peculiar among industrial workers and suggest steps for the prevention of the ill-effects by suitable protection. Apart from the necessity of educating the workers on first-aid and 'safety first', there should be provision for transport to hospitals in times of need. In one big factory, he had recently advised the appointment of a doctor instead of first-aid certificate holder and he was glad to note that the morale of the workers had improved tremendously. There were several other problems to be tackled in industry, like conditions of work, hours of work, wage disputes and periodical medical examination. Proper housing was a big problem which could not be solved within a short time. But any attempt in this direction would have a definite effect on the peace of mind of workers. Transport of workers to their places of work was also an important problem, besides recreational facilities and opening of canteens." In this connection, the Minister paid a tribute to

the example set by Mr. S. Anantaramakrishnan. Referring to holidays for workers, he said that even boilers required rest if they were not to break down and added that if the law could apply to boilers, it should apply much more to human beings.

"Enlightened employers," Dr. Krishna Rau said, "should be in the van of progress If they showed the way, the Government would come in to legislate not for such employers but for other emyloyers who did not follow their example. A medical examiner in industry had an important place. He should tell the management what the workers deserved and the employer should take his word and give him facilities. He had a big responsibility and he ought to be respected by all concerned. He felt that they should remember the worker and his inherent good nature and explain to him that what was being done for him in industry was for his benefit. If this was done, the workers would follow the path of fairplay and justice." The Minister commended the aims of the Society and hoped that it would produce fruitful results.

Mr. Shetty's Address

Mr. Shetty said that the formation of the Society at Jamshedpur four years ago and the starting of this branch in Madras to-day were welcome events. "This country was becoming rapidly industrialised and there was now an increasing need for establishing Industrial Health Services. In highly industrialised countries, Industrial Medical Services had begun to develop from the beginning of this century. Considerable expansion had taken place in these services during the Second World War. In the earlier years, industrial medicine concerned itself mainly with treatment of occupational disease and injury. Gradually it had developed interest in preventive work. Managements of industrial concerns were, in the past, giving primary consideration to the improvement of machinery, as a factor of "good business". They had now come to realise that the human "material" was their greatest asset and that by keeping the health of the worker at a high level they could achieve maximum production.

Health hazards in Industry

The objective of industrial medicine, the Minister said, was to preserve the health and promote the general well-being of the workers. Industrial medicine started as 'First aid to the injured' and it had now developed highly organised health and medical programmes. It had to control special health hazards by making working conditions safe and healthful. Though industrial medicine was a specialised form of medical and public health practice, its scope in recent years had become widened so as to embrace various aspects of curative and preventive work including nutrition and psychiatry. The object of industrial medicine in short was to keep the worker on the job, maintain his physical and mental welfare and enable him to work at top efficiency. The improvement of the health of the worker paid good dividends in production and profits. Industrial medicine had now enlarged its field of care to the worker as a member of society during all the 24 hours of daily existence." The Minister pointed out the widely used method of what was called "job analysis" in America.

Mr. Shetty referred to the Factories Act and said that many of the small factories in India like oil mills, flour mills and iron foundries were located in unsuitable buildings, where workers had to do their job under unhealthy conditions. Improvement of environmental conditions in the factory was as necessary for the health and welfare of the employees as the regulation of the hours of work, rest and relaxation. Many kinds of new manufacturing processes were now being introduced and they were creating their own health hazards. Plans had to be developed for safeguarding the health of employees by means of highly technical research. The proper housing of industrial workers was now a responsibility increasingly taken up by enlightened employers.

Western countries had developed schemes of compulsory insurance to provide against the risks of sickness, injury, unemployment, old age etc. It was a method of sharing the burden of sickness between the employees, their employers and the State. The

Employees' State Insurance Act passed by our Central Assembly in 1948 was a measure to insure factory workers against similar risks and to provide certain benefits to them in cases of sickness, disablement and maternity and to help their dependents in the event of death as a result of employment injury. The implementation of this scheme would require additional hospital facilities and the services of full-time and part-time doctors at industrial centres. The institution of the panel system would also become necessary. Doctors would have to play an important part in making this scheme a success. In England they had newly instituted Diplomas in Industrial Health. Those who wished to become Industrial Medical Officers must equip themselves properly for the task and they should possess wide sympathies and interests which would enable them to work harmoniously with both the management and workers."

Mr. Shetty congratulated those who had organised the Madras Branch of the Society and hoped that it would stimulate interest in the study of industrial medicine and prepare them for more efficient work in the new duties which they might be called upon to undertake in the near future.

Dr. V. N. C. Rao proposed a vote of thanks.

* * *

There was a General Body Meeting of the Branch on Friday the 6th June at 7-45 p.m. Notice for this General Body meeting was sent along with invitations for the inaugural function. The following were present :—

Members :—Dr. A. V. Nagarajan, Dr. C. M. Ramakrishna, Dr. S. Sankaran, Dr. S. H. A. Krishnan, Dr. T. K. Jacob, Dr. S. K. Srinivasan, Dr. N. Srinivasan, Dr. R. S. Jagannathan, Dr. V. N. Rao, Dr. C. K. Ramachandar.

Associate members :—Mr. V. G. Subba Rao, Mr. C. R. Reddy.

Persons who are eligible for membership and who have applied for membership :—

Dr. Isaac, Dr. Mitchell, Dr. M. S. Seshadri, Dr. C. V. Narayana Rao, Dr. B. Ramamurthi, Dr. T. S. Adisubramaniam, Mr. N. S. Bhat, Mr. V. R. Natesan.

Persons whose applications are pending with Council of Parent Body for election :

Dr. T. V. Sivanandum, Dr. S. Ganapathi, Dr. A. K. Padmanabhan.

Dr. V. N. C. Rao was proposed to the chair to conduct this meeting by Dr. N. Srinivasan and this was seconded by Dr. C. K. Ramachandar. As there were no other proposals Dr. V. N. C. Rao took the chair.

The Laws and Bylaws of the Madras State Branch were read by the Chairman.

Dr. C. K. Ramachandar proposed they be adopted and this was seconded by Dr. K. S. Jagannathan and was unanimously carried.

Election of Office-Bearers

Chairman—Dr. V. N. Rao, Proposer : Dr. N. Srinivasan, Seconder : Dr. S. K. Srinivasan.

Hony Secretary—Dr. C. K. Ramachandar, Proposer : Dr. N. Srinivasan, Seconder : Dr. K. S. Jagannathan.

Hony. Treasurer—Dr. N. Srinivasan, Proposer : Dr. C. K. Ramachandar, Seconder : Dr. C. M. Ramakrishnan.

Committee Members :

Dr. V. Krishna Rao, Proposer : Dr. C. K. Ramachandar, Seconder : Dr. K. S. Jagannathan.

Dr. S. Ganapathi, Proposer : Dr. C. K. Ramachandar, Seconder : Dr. C. M. Ramakrishnan.

Dr. C. M. Ramakrishna, Proposer : Dr. C. K. Ramachandar, Seconder : Dr. S. K. Srinivasan.

All these offices were filled in uncontested and unanimously. There was then a general discussion on the frequency of the holding of meetings and avenue of meetings.

Though no formal resolution was tabled and voted, it was generally agreed that a meeting be held about once a month and that every third meeting be held out of Madras. The E. C. were empowered to do, what was practicable.

A vote of thanks was proposed by Dr. S. Ganapathi.

The Third Annual All-India Pædiatric Conference, Madras, 1952

The chairman and members of the Sponsoring Committee and the Executive Committee of the Indian Pædiatric Society invite you cordially to attend the Third All-India Pædiatric Conference to be held at the Medical College, Madras, on the 24th, 25th and 26th August 1952.

The Conference will be inaugurated by His Excellency the Governor of Madras.

Programme

24th August, '52.—Forenoon—Inauguration of the Conference, Welcome Address Etc. Afternoon—Scientific Session. 25th August '52.—Forenoon—Scientific Session. After noon—Scientific Session.

26th August '52.—Forenoon—Scientific Session. Afternoon—Scientific Session and General Body Meeting.

Subjects Proposed for Discussion.

1. Administrative Problems of Child-Health,
2. Childhood Tuberculosis,
3. Nutrition Problems in Infancy and Childhood in India,
4. Congenital Heart Disease—Medical and Surgical Aspects,
5. Meningitides and Encephalitides,
6. Papers on other pædiatric topics.

All communications may be addressed to the General Secretary, Dr. S. T. Achar, General Hospital, Madras-3.

——

Dental Techniques to be Televised (Demonstration at London Congress)

Television cameras and the famous Telekinema—of the highlights of last year's Festival of Britain South Bank Exhibition—will be used to assist in demonstrations during the 11th International Dental Congress being held in London from July 19 to 26. The Congress will be attended by delagates from 43 countries, including Dr. R. Jennings of the All-India Dental Association and Dr. R. Mukerjee of Calcutta Dental College and Hospital.

The programme for the Congress includes table clinics for demonstrations —60 a day, at which some of the most renowned members of the profession will demonstrate by models their methods in various techniques in dentistry. Where it is noted that a demonstrator is attracting a large number of visitors, he will be asked to repeat the demonstration before television cameras, and the results will be shown in the Telekinema on the South Bank, so that 400 people will be able to see what he is doing and hear what he says without overcrowding.

This will be the first time that a television screen 18 ft. by 16 ft. has been used—a method that was decided upon, as it is not possible for a crowd of people to watch what is being done to a particular tooth in a confined area.

LATEST EQUIPMENT.—Another feature of this side of the Congress will be the exhibition of scientific films, and a scientific exhibition at which delegates will be able to stroll round at their leisure and see photographs, microphotographs, models and apparatus and study them. There will also be a trades exhibition where, on some 50 stands, British and overseas manufacturers will show the latest dental equipment.

EXHIBITION FOR PUBLIC.—The general public will be catered for in the County Hall—adjoining the Festival Hall—where a dental health exhibition is being staged.

There will be discussions at the Congress on the never-ending search for better means of prevention of tooth decay. It has been found, for instance, that fluorine in a town's supply of drinking water cuts down dental decay, and at the dental health exhibition a model of the plant used in the U.S.A. for fluorinating water will be shown.

The exhibition will also include the showing of a film which will present to the public in simple, non-technical language ways in which they can help in the preservation of their own and their children's teeth.—*B.I.S.*

——

New Process for Making Cortisone Reduces Price

A new process for producing cortisone was discovered by a team of chemical researches at the Upjohn Company, Kalamazoo, Mich., U.S.A., and opens the way to providing mankind with unlimited supplies of the drug. Cortisone has been found of great value in the treatment of rheumatoid arthri-

tis, rheumatic fever, burns, eye ailments and other conditions. The new production process ends dependence on a very complex and costly chemical series of procedures for making cortisone. It ends also the dependence on scarce cattle bile acid as the starting material. The new process has enabled the firm to cut the price of cortisone 20 per cent initially. With this new process, also, a group of cheap and readily available raw materials, such as soya beans, yeast and a mexican yam derivative, can be used to make cortisone. Before the Upjohn process, at least 20 complex chemical steps were required to produce cortisone.—(*M.P.I.B.*, June 1952).

REVIEWS OF BOOKS, PERIODICALS AND REPORTS

The Thyroid—By McGAVACK, B.A., M.D., F.A.C.P., Professor of Clinical Medicine, New York Medical College, Director of New York Medical College and Metropolitan Research Unit (1951). (Agents in India M/s. Kothari Book Depot, King Edward Road, Parel, Bombay).

This monograph on thyroid consists of 620 pages divided into 4 sections which are further divided into a number of smaller chapters

The first two sections are concerned with the historical aspect, the anatomy and antithyroid drugs including radio-active isotopes. The chapter on historical aspect is complete and gives a comprehensive view of the trends of opinion regarding the nature of the thyroid, its diseases and treatment. The chapter on synthesis and nature of thyroid hormone is written in a very simple manner and is easy to understand, more so, with the help of diagrams the author has provided. The chapter on radio-active iodine is very well written and gives some recent trends regarding the diagnosis and treatment of thyroid diseases and is very well summarised at the end of the chapter.

Two later sections include the specific diseases of the thyroid and the last three chapters include the preoperative, operative and post-operative treatment by thyroidectomy. The chapter on adult myxœdema and thyrotoxicosis are very exhaustive and upto-date. The author has devoted a separate chapter for ophthalmopathic Graves' disease and its pathology is excellently written. The author introduces a new nomenclature for Hurthle cell adenoma—i.e. adenoma with Hurthle cell change or carcinoma with Hurthle cell change. It is really doubtful if many pathologists would agree to this.

The only drawback of this monograph is the lack of diagrams and photomicrographs; but however the book gives on the whole an excellent and balanced summary of the present status of Thyroid disease and its treatment and it should be helpful to the clinician and the post-graduate student.

D.B.B.

Review of Physiological Chemistry—By HAROLD A. HARPER, Ph. D., Professor of Biology (Biochemistry), University of San Fransisco, Biochemist Consultant to Metabolic Research Faculty, U. S. Naval Hospital, Oakland, Lecturer in Surgery, University of California School of Medicine, San Fransisco. 3rd Edition. 260 pages. Published by the University Medical Publishers. P. O. Box 761, Palo Alto, California. Price $ 3.50.

This book is essentially a review in which the subject of Physiological Chemistry has been dealt with in a concise manner. The subject matter has been divided into 21 chapters. The first chapter deals with General and Physical Chemistry. The next three chapters deal with carbohydrates, fats and proteins. The 5th chapter deals with nucleoproteins and nucleic acids. The 6th chapter deals with vitamins and in this section have been illustrated the latest constituents of the vitamin B complex group like pantothenic acid, inositol etc., together with a brief reference to folic acid groups. The 9th chapter deals with blood, lymph and cerebrospinal fluid. In this chapter particular reference has been made to the plasma proteins, anæmias etc. Chemistry of respiration forms the subject matter for the subsequent chapter The transport of oxygen by the blood, the physical exchange of gases etc. have been dealt with in this group. Metabolism of carbohydrates and the metabolism of fat have been dealt with separately followed by protein metabolism. In the chapter dealing with protein metabolism, amino-acids have been dealt with in detail. The functions and tests of the liver and kidney have been explained in the next two chapters. Hormones form a complete chapter by themselves. The structure of these hormones has been given very well. A brief reference has been made to ACTH also. The sex hormones including male and female sex hormones have been included in this group. The subject matter has been illustrated with explanatory charts and tables wherever necessary.

The advantage this book has over others is that the subject matter has been compiled in a concise manner, but with plenty of charts and structural formulæ, so that the subject becomes very easy for the average student to grasp. The book has been very well printed and has been neatly got up with a good index. It should be of great

value to the student of physiology and physiological chemistry. U.V.R.

Methods in Medicine—The Manual of the Medical Service of George Dock, M.D., Sc.D. rewritten and completely revised by GEORGE R. HERRMANN, M.D., PH.D., Professor of Medicine, University of Texas Medical Branch at Galveston; Director of Cardiovascular Service and Heart Station, University of Texas Hospitals, Consultant in Medicine to Surgeon General, U.S. Army, Consultant in Vascular Diseases to the Marine Hospitals, U.S.P.H.S., Second Edition, 488 pages. Published by the C.V. Mosby & Co., St. Louis, U.S.A.

This book is unusual in many respects. It is unusual because unlike other books unnecessary theoretical details have been omitted and great pains have been taken to present the necessary practical details in everyday ward work. The first chapter deals with history taking, physical examination, methods of diagnosis, general laboratory routines etc. The next chapter deals mainly with clinical pathology and clinical laboratory methods. The usual methods of finding out normal and abnormal constituents in urine, fæces, sputum, gastric contents, cerebrospinal and other body fluids etc. have been dealt with in detail. The third chapter is the one that should be gone through in great detail. The chapter presents the outstanding features in each disease. It also points out the additional symptoms or signs that we have got to look for in particular diseases together with the laboratory investigations in each condition. This is very rarely found in other books. Thus this chapter has dealt with diseases of each system in the above manner in great detail. The 4th part deals with treatment and management of disease together with special attention to diagnosis and treatment of emergency conditions. The last chapter is very useful in that it has simplified and made clear to the practitioners the diets suitable for various conditions.

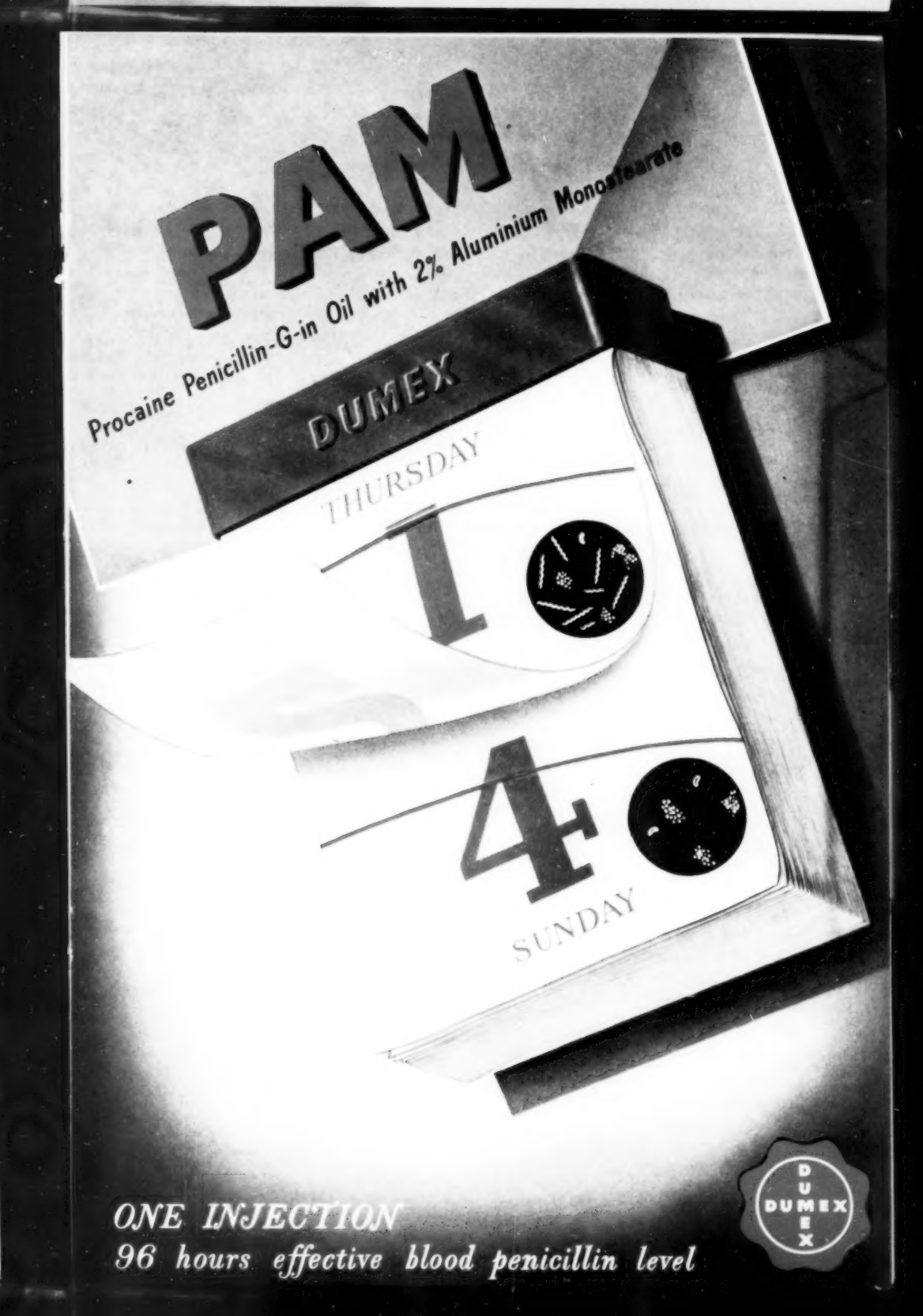
The book has been very well got up and should be extremely useful to practitioners especially hospital interns and resident officers. U.V.R.

Health in the Tropics—By Lt. Col. M.S. IRANI, F.R.C.S. (Ed.) I.M.S., Retired, pp 227, illustrations 43. Printed and Published by D. B. Tharaporewala & Sons Ltd., Treasure House of Books, 210, Hornby Road, Bombay. Price Rs. 4/8/-.

This book is evidently not meant for serious study by a doctor but it is an ideal instructor to the layman with regard to the steps he would have to take in medical emergencies till the arrival of the doctor. The subject matter has been divided into 13 chapters. To start with, the author gives a fundamental idea of the anatomy and physiology of the human system together with the outlines of fundamental bacteriology. He follows with a description of some of the common complaints and the symptoms they exhibit. Vitamins and the diseases due to their deficiency have been touched upon. The chapter on First Aid to the injured and bandaging instructions have been given in a clear and thorough manner and it is in fact one of the best chapters in this book. Insect bites, snake bites etc. have been dealt with in a separate chapter. The last chapter contains mainly the various prescriptions that are commonly used in every day practice. The book is a small one and as such it is useful for purposes of reference. It should be an ideal guide to the educated classes as well as to students undergoing training in first aid and nursing. U.V.R.

Personal Health and Community Hygiene—By HAROLD S. DIEHL, M.D., Professor of Preventive Medicine and Public Health and Dean of Medical Science, University of Minnesota and RUTH E. BOYNTON, M.D., Professor of Preventive Medicine and Public Health and Director of Students, Health Service, University of Minnesota, 1951, Second Edition, Pages 469. Published by the McGraw Hill Book Company, Inc. New York, Toronto and London.

This book which is one of the many books constituting the McGraw-Hill series in nursing has a wide range of usefulness. This book is actually a revision of the book 'Healthful living for Nurses'. The book aims at instructing members of the nursing profession, the best way to safeguard their own health as well as the health of their patients. The subject matter is divided into a number of chapters for convenience of study. One prominent feature in this book is that at the end of each chapter a series of questions are posed to the reader. This is a good but novel idea; for it provides material for discussion of the subject matter. The chapters on specific disease prevention, controlling communicable diseases, sanitation and health are all very well written. Mention is made also of important aspects of sex-life and venereal diseases from the point of view of their harmful effects in adolescent life. The concluding chapters relate to the progress in improvement of health conditions together with research in the field of preventive medicine. The book is printed in bold and clear type. We reiterate that this book will be useful not only to the members of the nursing profession but also to students of sanitary science and preventive medicine. U.V.R.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P.A.C. 75 6-8; 250 18-0
Neo Salvarsan 30 0-14; 45 1-0;
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Redoxon 2 cc. 4-14; 5 cc. 4-6
Calcium Sandoz 10%
,, 5 cc. 10 8-10; 10 cc. 5 5-4
,, 5 cc. 50 38-8
,, 10 cc. 50 43-8
Distilled Water 100 amp. 5 cc.
[6-0 10 cc. 8-0;
Aminophyllin tab. 25 2-0; 100
,, amp. 5 amp. 2 cc. 4-10; [4-8
[10 cc. 5-14
Acetylarsan 3 cc.-6-6; 2 cc. 5-4
Glucose Sol. 25% 25cc. 100 20-12
Emetine Hyd. ½ gr. 12 4-4; 100
,, ¾ gr. 12 amp. A&H 7-12 [35-0
,, PD 6 amp. ½gr. 6-10; 1gr. 11-0
,, B.W. 12x½gr. 10-0; 6x1gr. 9-8
Compolan 2 cc. 5 5-8; 25 25-4
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Calcii Ostelin 15 cc. 3-6; 6 amp.
[3-0
Ephedrin Hyd. ½ gr. 100 amp. 9-12
Combex 10cc. 6-12; Premix 5cc. 2-0
Atebrin amp. 3G. 25 amp- 17-8
Vit. B complex 2 cc. 100 37-0
,, B_1 100 mg. 100x1 cc. 35-0
,, 50 mg. 100x1 cc. 24-0; [10 4-8
[10 3-0
,, 10 cc. 100 mg. 4-0; 50mg. 3-0
,, C 100mg. 2cc. 100 20-0, 10 3-0
,, ,, 500mg. 5 cc. 100 40-0; 10
[5-12
Micrabin 6 amp. 20 M 3-6
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Liver Extract 10 cc. 3-2 TCF
,, ,, with Vit. B&C 4-6
,, P.D. 2 USP 10 cc. 3-14
,, ,, 5 USP 10cc. 7-10
Entodon Bayer 10 amp. 8-4
Atebrin Bayer 15 0-11; 300 8-4
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,, Diazine 500 41-12; 100 11-0
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